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ABSTRACT

This hearing, which is the first of a series of hearings on the 1990 decennial census, focuses on automation activities, pretest preparations, and proposed residency rules. Gene L. Dodaro, associate director of the General Accounting Office, calls on the committee to use special purpose tests to adequately evaluate the following: (1) potential of different types of data entry equipment; (2) questionnaires, specifically a short simplied form; and (3) procedures, including the two-stage census and multi-phase mail followups. Sherman Funk, Inspector General of the Department of Commerce, says the following improvements in Census ADP Systems development are needed: (1) long range planning group should be expanded and headed by an experienced senior executive; (2) an automation master plan should be prepared; and (3) census ADP systems development should be continuous and separate from the decennial process. John G. Keane, Director of Bureau of the Census, and Peter A. Bounpane, Assistant Director for Demographic Censuses, give an overview of the census. Also included in the hearing are an address by New York Mayor Edward I. Koch, preliminary recommendations on enumeration and residence rules, and additional material on questionnaire content and design. (LMO)

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PLANS AND ACTIVITIES FOR 1990 DECENNIAL CENSUS

PART 1

HEARING

BEFORE THE

SUBCOMMITTEE ON
CENSUS AND POPULATION

OF THE

COMMITTEE ON POST OFFICE AND CIVIL SERVICE HOUSE OF REPRESENTATIVES

NINETY-NINTH CONGRESS

FIRST SESSION

JULY 25, 1985

Serial No. 99-21

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PLANS AND ACTIVITIES FOR 1990 DECENNIAL CENSUS

THURSDAY, JULY 25, 1985

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE CENSUS AND POPULATION,
COMMITTEE ON POST OFFICE AND CIVIL SERVICE,
Washington, DC.

The subcommittee met at 10:30 a.m., in room 311, Cannon House Office Building, Hon. Robert Garcia (chairman) presiding.

Mr. GARCIA. Good morning and welcome to the hearing of the Subcommittee on Census and Population on the Census Bureau's plans and activities for the 1990 decennial census.

This hearing is the first of a series of hearings on the 1990 decennial. We hope, that through a series of hearings focusing on various pertinent issues on the decennial planning, we can ensure that the Census Bureau will be fully prepared to carry out the 1990 decennial successfully. Today we will focus on automation, pretests, and residency rules.

Counting the American people, needless to say, is a monumental task. How does one go about counting millions of people accurately while keeping the costs of counting at a minimum?

At our April 18 hearing on an overview of the Census Bureau, a major concern raised was whether the Census Bureau will be fully prepared, especially in regards to automation decisionmaking, to carry out the 1990 decennial effectively and efficiently. At that hearing, the General Accounting Office informed us that it is questionable, and I underline the word "questionable," whether the Bureau is making timely decisions on automation. The inspector general of the Department of Commerce has also expressed similar concerns.

We have the advanced technology to make the decennial cost-efficient and accurate. The key question before us today is will the Census Bureau make timely decisions so that it will be prepared to take full advantage of the available technology.

Another topic of concern before us today is the pretests. We are spending millions of dollars on them. Are they worth the cost? Do they test ideas which will directly improve the plans for the 1990 decennial?

We in Congress are under constant pressure to control Government spending. While we should not sacrifice the quality of statistics that are vitally important to development of policies and programs for the American people, we must ensure that the costs for

the decennial be minimized. Are the pretests helping us or hindering us in our pursuit of that goal?

Further, through the Census Bureau's management plan, we learned that the Bureau has proposed residency rules, that is, how people will be counted if they are in one place for vacation or for any other purposes while their permanent residence is at another place. Since the decennial is a population and housing count, this topic is important. We want to find out what the Census Bureau has proposed.

The decennial census is the most complete picture of the American people, and during the years between decennials, official statistics are largely based on the decennial data. From local to national levels, governments and organizations heavily depend on decennial data in establishing and implementing social, economic, and health programs. Therefore, the paramount importance of decennial data, especially the importance of their accuracy, can never be understated.

All of us here today are concerned about the 1990 decennial. We would not be here if we were not. We are not here as gadflies to the Census Bureau. We are here to understand the various activities involved in the preparations for the 1990 decennial. It is my hope that through this hearing, not only we in the Congress but the public as well will have a better understanding of the plans and activities for the 1990 decennial.

Normally we would have the Census Bureau testify first. However, for this hearing, we request that the General Accounting Office be our first witness and then the inspector general. The Census Bureau will testify last so that it will have the opportunity to respond to the GAO's and the inspector general's testimonies.

I am also requesting all the panelists to remain during the question and answer period so we can have some dialog.

I would like to apologize to all of you personally for the delay in starting this hearing. I left at a good time from the city of New York, and I should have been here in plenty of time. But if you want to make any complaints or verify what I have said call New York Air and you will find out that the 8:30 was delayed by 1 hour. That is the reason why I am exactly 1 hour late. [Laughter].

But I thank you for your patience, especially my colleague from Indiana, John Myers, who was here on time, and my colleague from Utah who joined me in the elevator as we were both rushing out.

I would now like to yield to my colleague from Utah.

Mr. HANSEN. Mr. Chairman, thank you very much, I appreciate your opening remarks. And I join with you and appreciate the opportunity to be with you today in the update of the Census Bureau's preparation for the 1990 decennial census.

Both the GAO and the Commerce Department inspector general appear to have some serious concerns about the Census Bureau's plan for the 1990 census. Obviously, in the preparation for a major task, such as conducting the census, enormous problems undoubtedly arise. However, there appears to be questions at this time about the Bureau's ability to meet its responsibilities in a timely and cost-efficient manner.

I hope today's testimony can shed new light on the Bureau's decisions. I look forward to their testimony. I appreciate being with you today.

Thank you very much.

Mr. GARCIA. My colleague from Indiana.

Mr. MYERS. Well, Mr. Chairman, though it used to be that Indiana was farther away than New York, but this morning, it was not, was it? It is easy to get caught out there, I know.

Thank you very much. I welcome the witnesses.

Mr. GARCIA. Let us start off with Mr. Gene L. Dodaro, who is Associate Director of the General Government Division of the General Accounting Office.

STATEMENT OF GENE L. DODARO, ASSOCIATE DIRECTOR, GENERAL GOVERNMENT DIVISION, GENERAL ACCOUNTING OFFICE, ACCOMPANIED BY JACK KAUFMAN

Mr. DODARO. Thank you.

Mr. Chairman and members of the subcommittee, I am pleased to appear today to discuss the Census Bureau's preparations for the 1990 census. I am accompanied by Mr. Jack Kaufman, who is responsible for our audits at the Bureau.

We have prepared a full statement addressing the areas you requested. With your permission, Mr. Chairman, I would like to have it entered into the record and at this time briefly summarize our observations.

Mr. GARCIA. So granted.

Mr. DODARO. Thank you.

My comments this morning will focus on the Bureau's automation planning and pretest activities concerned with improving mail response.

We commend the Bureau for its initiative in testing alternative technologies and exploring other ways to improve census operations, such as developing an automated address file. However, the Bureau's preparations, including tested date and planned milestone dates for important decisions are not moving at the pace we believe necessary for a cost-efficient 1990 census.

We share your view that the next census not repeat the mistakes of the past. The Bureau has already lost valuable time and, as a consequence, has not maximized the opportunities afforded by the pretest.

We remain concerned that the Bureau is waiting until September 1986 to make an equipment decision. An early 1986 decision would be more appropriate. Historically, the Bureau has taken 4 to 5 years to procure automated equipment after its need has been identified. If history is any indication of what the future holds, a late 1986 decision could impair the conduct of an effective and economical census.

Presently, the Bureau is evaluating three types of equipment, its historically proven method—the FACT 80 system, the optical mark reader, and data key.

The optical mark reader was tested as part of the 1985 Tampa pretest. Because the reader was designed to process a much smaller size form than that used in 1980, the Tampa pretest questionnaire

was physically reduced in size while still containing all the 1980 short form questions. This reduction provided smaller spaces for the questions and answers. Apparently, respondents were confused as to where to place the answer to a question or just overlook questions. Even for traditional low nonresponse questions, such as sex and birth for example, almost 12 percent of the Tampa respondents did not answer the question on sex compared to 2 percent in Jersey City.

Absent a more simplified or multipage form, the Bureau must now retest an optical mark reader that can accommodate a larger size document to evaluate the reader's suitability for the 1990 census.

The Bureau is also seriously considering the use of data keying, the most expensive, slowest, and error-prone data entry option.

According to one Bureau plan, as many as 35,000 machines would be acquired at a total estimated cost of $175 million. This is at least $165 million more than the other current equipment options. Bureau officials estimate that during the census tabulation, 140,000 keyers would be needed. Personnel costs could exceed $200 million, and recruiting and training such a large number of operators would be a monumental, if not impossible, task.

The Bureau also has eliminated some automation alternatives without testing them. For example, optical mark readers can process a multipage short or long questionnaire provided the form has pages that can be separated and read individually. We believe this alternative should be tested and actively considered by the Bureau.

The use of desk top optical mark readers should also be seriously evaluated. These readers are fast enough to process large volumes of forms quickly for decentralized data entry. They are inexpensive enough to be acquired in large quantities and could have a diversity of uses after 1990.

Now, let me discuss several activities in the 1985 pretest which were designed to improve mail response. These included the two-stage census in Jersey City and the use of mail reminder cards in Tampa. Both these activities, in our opinion, had flaws which limit their usefulness. The short form questionnaire used in the first stage of the Jersey City test was not the simplified form we advocated. It contained more questions than are necessary to carry out the basic objectives of the population count. For example, questions about plumbing and the rent of housing units increased the questionnaire's complexity and discouraged response.

The second stage long form repeated almost all the questions asked initially on the first form, as well as additional questions. This repetition of questions and a lack of an adequate publicity campaign probably had much to do with the poor response rate for the second stage.

An adequate assessment of the reasons for nonresponse was not carried out. Limited interviewing of nonrespondents was hurriedly planned for the first stage, but the sample size was too small to derive valid statistical results. In addition, the Bureau had no plans to evaluate reasons for nonresponse to the second stage. In short, the results of the two State censuses are inconclusive and the test was of limited value.

In the Tampa pretest, the Bureau mailed just one reminder card to about half of the nonrespondents. The cards generated a net 3.8 increase in responses, but enumerators still had to make visits to 40 percent of the households. We believe the Bureau missed an opportunity to test the full thrust of our previous recommendation concerning the use of multiphase mail followup. In that procedure, two to three mailouts would be made prior to the Bureau beginning door-to-door followup enumeration.

At least one reminder should include another questionnaire in case the original was discarded. Considering the high cost associated with door-to-door visits, the multiphase approach should be examined. The Bureau has estimated that each 1-percent increase in the response rate for 1990 would save $5 to $6 million

In summary, we are concerned about missed opportunities in the 1985 pretest. In view of the short planning time remaining, we believe the Bureau cannot afford the luxury of testing all the potential improvements in its formal pretest. Pretests require about 1 year for preparation, are expensive, and involve enumerator followup activities which are not a requisite for all testing.

We believe the Bureau should use special purpose tests to adequately evaluate, one, the potential of different types of data entry equipment; two, questionnaires, specifically short simplified form; and, three, procedures, including the two-stage census and multiphase mail followup. Such tests could be completed months ahead of the 1986 pretest and would provide the Bureau an opportunity to make up for some lost time in its decisionmaking.

This concludes my remarks, and later we will be happy to answer any questions.

[Statement follows:]

STATEMENT OF GENE L. DODARO, ASSOCIATE DIRECTOR, GENERAL GOVERNMENT DIVISION, U.S. GENERAL ACCOUNTING OFFICE

Mr. Chairman and Members of the Subcommittee:

I am pleased to appear today to discuss the Census Bureau's preparations for the 1990 Decennial Census. I am accompanied by Mr. Jack Kaufman, who is responsible for our audits at the Census Bureau. My comments will focus on the Bureau's automation activities and pretests preparatory for the 1990 census. I also will comment on the proposed residency rules for the 1990 census and briefly discuss the recommendations made by the Commerce's Office of Inspector General on the Bureau's organization and automation plans.

The Bureau's preparations, including tests to date and planned milestone dates for important decisions, are not conducive to a cost efficient 1990 Decennial Census. We share your concern that the 1990 census not become a census of lost opportunities. On the bright side, however, some options are available for the Bureau to get back on track, but time is quickly running out.

Although it may appear that there is ample time to plan wisely for the 1990 census, in fact there is only a limited time to thoroughly test significant changes or modifications to census forms, equipment, and procedures. For all practical purposes the Bureau must complete these evaluations well before its 1988 dress rehearsal. Developing census forms and procedures for the 1988 rehearsal will take about one year or longer. Thus, in early 1987 the Bureau must decide almost exactly how it will conduct the 1990 Decennial Census. The importance of the 1985 and 1986 pretests and special purpose

tests cannot be overstated. These tests will be the last ones completed in time to precipitate major changes in the 1990 census.

With this timetable in mind, we will highlight our observations and suggestions to help expedite the Bureau's planning and improve its preparatory efforts.

AUTOMATION OF QUESTIONNAIRE PROCESSING

Early indications are that some concepts tested in the 1985 pretests have potential for 1990 census application. These successes include accounting for questionnaires as they are received, early capture of data into computer files, and automated review of questionnaires for determining the completeness and consistency of responses. However, as discussed in our April 18, 1985, testimony before this subcommittee, we remain concerned that the Bureau is waiting until September 1986 to make an equipment decision. An early 1986 decision would be more realistic, given the Bureau's procurement experience. Historically, the Bureau has taken 4 to 5 years to obtain automated equipment after its need has been identified, yet the decision on the equipment to be used for the 1990 census is not scheduled until late 1986.

Equipment alternatives

The Bureau is actively considering three types of data entry equipment and has incorporated them in its pretests. These three types are:

--A modified version of the film optical sensing device/FACT 80 used in the last census.

--Large optical mark reader/scanners.

--Data entry keying.

The FACT 80 and the optical mark reader will be tested in the 1986 Los Angeles pretest, and data entry keying will be tested in the 1986 Mississippi pretest. Both optical mark reader equipment and data keying were used in the 1985 pretests. Data keying will also be used in Los Angeles for name capture for the post enumeration survey and for entering data from some of the long forms. The existing optical mark reader does not have page turner capability needed to capture the data from the currently designed long forms.

FACT 80

The FACT system, developed jointly by the Census Bureau and the Bureau of Standards, has been used in every decennial census since the 1950's. The system incorporates an automated camera for microfilming, a device for turning pages, and a film optical sensing device for input to computers (FOSDIC). The current cost estimate for producing an upgraded version of the 1980 FACT system is $75,000 per camera and $75,000 per FOSDIC. The number of complete, modified FACT 80s needed would depend on the deployment and turn around speed needed. Under one current FACT 80 deployment scenario, the Bureau would need about 60 automated cameras and 36 FOSDICs for the 1990 census. Under this scenario, acquiring the equipment through either in-house assembly or contractor fabrication would cost about $5.9 million and would take several years.

Optical mark reader

The optical mark reader was tested in Jeffersonville, Indiana, as part of the 1985 Tampa pretest. The Jeffersonville personnel found it easy to use, and the raw data from the test shows that the machine records marks on the questionnaire accurately. Despite six breakdowns requiring minor repair, the optical mark reader performed well.

The machine operation does, however, require that the questionnaires be stored in a climate-controlled environment and not be exposed to high levels of humidity. On several occasions during testing, the reader failed to read properly because of improper questionnaire storage. This problem was resolved when the questionnaires were placed in the proper environment for several hours.

Another problem noted was the higher-than-usual nonresponse rates for some questions. Because the optical mark reader was designed to process a much smaller size form than that used in 1980, the questionnaire for the Tampa 1985 pretest was physically reduced in size while still containing all the 1980 short form questions. This reduction in form size provided smaller spaces for the questions and responses. Apparently, respondents were confused as to where to place the answer to a question or just overlooked questions. This problem was confirmed by comparing the percentage of nonresponses for the compressed Tampa form versus the more spacious Jersey City form--even for such basic questions as sex and birth which traditionally have very low nonresponse rates. For example,

almost 12 percent of the Tampa respondents did not answer the question on sex, compared to 2 percent of Jersey City respondents. About 17 percent in Tampa did not answer the question on century of birth compared to about 4 percent in Jersey City.

The optical mark reader pretest also did not resolve some Bureau concerns. The Bureau needed to test the reader under heavy workload conditions to determine its reliability in a census environment, but the Tampa pretest did not provide a sufficient volume.

In order to test the reader under a heavier workload, the Bureau devised an optical mark reader "load test" that took place between May 20 and June 4, 1985. During this test, previously processed Tampa questionnaires were run continuously through the reader for 4 to 8 hours daily. On some days, as many as 30,000 forms were reprocessed; during the entire "load test" a total of about 158,000 forms were processed. The optical mark reader again operated very well. It did, however, have two breakdowns; one was corrected with a minor repair and the other required the vendor to dispatch a technician from the Iowa office. What caused this latter breakdown is still uncertain.

Because the optical mark reader used in the Tampa pretest was not designed for decennial census work, the Tampa pretest did not provide definitive information. Therefore, the Bureau plans to test a modified version of the optical mark reader in the 1986 Los Angeles pretest. The modifications being made, such as a change in the equipment's ability to accept a large

size questionnaire, are substantial enough to require an almost total reevaluation.

Bureau-required modifications to the optical mark reader tested in 1985 would allow it to process 11" x 17" forms as contrasted with the 8 1/2" x 11" forms. This appears necessary based on the problems the respondents experienced with the 1985 Tampa pretest forms. The Bureau estimates the cost of each modified optical mark reader unit at about $150,000, after an initial research and development cost of about $2 million. Therefore equipping 18 processing offices with 36 units would cost about $7.4 million. The unit that may be used in the 1986 pretest should be considered only a prototype model.

On June 20, 1985, the Bureau published a notice of intention to acquire a modified version of this optical mark reader from its vendor for testing in the 1986 Los Angeles pretest. Early indications are that several companies may wish to submit proposals. If this occurs, the Bureau will need to evaluate the proposals, which could slow down the planned data processing experiments for the 1986 Los Angeles pretest.

Data entry keying

Data entry keying is the slowest, most error-prone, and least automated of the three types of technologies. It is also the most expensive. In fact, when the Bureau developed the forerunner to the FACT 80 in the 1950's, it recognized that keying was too slow for the massive amount of data collected in a decennial census.

Nevertheless, the Bureau is strongly considering keying machines as the "automated" data capture equipment for 1990. Bureau officials are considering keying because it offers support to several aspects of decennial processing such as name capture of multifamily dwellings to assist in follow-up enumeration of questionnaire nonrespondents and for assessing the accuracy and completeness of the population counts (coverage evaluation activities). (Optical mark reader technology does not provide this capability). According to one Bureau plan, as many as 35,000 machines would be purchased at a unit cost, including software and hardware needed to operate the keying stations, of about $5,000 per machine or a total estimated cost of $175 million. This amounts to at least $165 million more than the cost of equipment for the other current data entry options. It should be noted that in recent years, according to a Bureau official, the industry has only produced an average of 20,000 keying machines in a year.

Another point to keep in mind is that the use of keying equipment requires the employment of many operators. Bureau officials estimate that during the census tabulations, the Bureau would have to hire 140,000 keyers to operate the 35,000 machines on two shifts and allow for the expected personnel turnover. The payroll costs of these operators could approximate over $200 million. Additionally, according to Bureau experts such a large number of keyers for short-term temporary work would not be available.

Inadequate time to properly evaluate equipment alternatives

The Bureau is likely to encounter difficulties in completing proper evaluations of each type of equipment in pretest performance prior to the planned selection date. Census day for the 1986 pretests is planned for late March 1986. The Bureau is scheduled to select the 1990 data capture equipment in September 1986. Assuming that the Los Angeles and Mississippi mail response rates are similar to the 56-percent rate in Tampa and 38-percent rate in Jersey City, the pretests are unlikely to be completed prior to mid-June 1986 because of the at least 2-month period needed to complete the field work. As in the case of the Tampa pretest, the Bureau would probably not begin analyzing the raw data from the testing until July 1986. This would leave the Bureau with just 2 to 3 months to complete its analysis of the three types of equipment. Such a time constraint could have an adverse impact on evaluating the optical mark reader, since it is the only equipment that the Bureau has not used extensively.

Bureau decisions on decennial offices and evaluation/adjustment plans could affect equipment decision

The Bureau's choice of equipment will be influenced by the number and locations of its 1990 processing offices and by its decision on coverage evaluation and possible population adjustment. If the Bureau chooses to have a centralized structure, it is likely to choose either the FACT 80 or the

optical mark reader to process the large volume of questionnaires. On the other hand, if the Bureau chooses a more decentralized structure, it becomes more feasible to use the slower data entry keying for the smaller volumes processed at each office. Additionally, the Bureau's current thinking on coverage evaluation/adjustment favors key entry. That entry technique allows the Bureau to enter names on computer files which is important for automated matching (comparing census results to other survey results) procedures. This technique will be tested as part of the 1985 Tampa pretest.

Alternatives not pursued by the Bureau

The Bureau has eliminated some automation alternatives without testing them. For example, optical mark readers can accommodate a multipaged questionnaire (i.e., the long form questionnaire), provided that the form has perforated pages that can be separated for processing. This alternative has not been actively considered by the Bureau. In the Tampa pretest, only the short form was processed using the optical mark reader equipment.

In addition, the desktop optical mark reader, an inexpensive ($15,000 system), easy-to-operate scanner, has been tested for other Bureau applications but not for the decennial census. The Bureau could use the desktop optical mark reader if it reduced the number of questions on the short form and thereby decreased the size of that form. Naturally, the required population questions would remain on the short form. Questions

removed from the short form and considered necessary could be included on the long form. The desktop optical mark readers are fast enough to process large volumes of forms quickly (about 400 per hour) for decentralized data entry, yet inexpensive enough to be acquired in large quantities, and could have a diversity of uses after the census.

Impact of life cycle cost on equipment decision

Bureau officials have indicated to us that they will consider some aspects of life cycle cost during the equipment selection decision process. The purchasing of equipment that has a once-every-10-years application, however, requires unique life-cycle-cost considerations. Bureau officials have indicated that they plan to consider the equipment's

--unit cost,

--overall cost,

--purchase-versus-leasing cost,

--processing capacity, and

--maintainability and reliability.

The Bureau's equipment acquisition objective of processing over 100 million questionnaires in a short time frame must be balanced by the need to consider the long-term cost and potential use of acquired equipment.

Equipment purchased for decennial processing should not end up in storage for 9 years, as was the case with much of FACT 80 equipment used in the last census. The Bureau conducts, on a

continuing basis, various surveys and censuses that could be tailored to make use of equipment acquired for the decennial. Given the rate of technological advancements, it is unlikely that equipment acquired for the 1990 decennial will be the most efficient equipment for the 2000 decennial. Therefore, it becomes very important that any equipment acquired for 1990 census have other Bureau uses during the interim nondecennial years. In addition, by identifying other uses for the equipment, equipment costs can be prorated among the various surveys and censuses.

PRETESTS

Jersey City

A two-stage census approach for administering questionnaires using long and short forms was tested in Jersey City. One half of the Jersey City households received only short forms (first stage) and about 6 weeks later 20 percent of them were sent a long form (second stage) to obtain additional information. In the other half of the city, (non-test portion) 80 percent of the households received a short form and 20 percent received a long form at the same time, similar to the 1980 census.

The two-stage was tested at the urgings of GAO and others to determine if simplifying the basic short form might encourage greater public cooperation and thereby improve the accuracy of the population counts, the primary purpose of the census. Moreover, a shorter, more simplified form would allow quicker

processing and thus more time for Bureau and local officials to review preliminary counts.

As we mentioned in our previous testimonies before your subcommittee in June 1984 and April 1985, we have strong reservations about the size and content of the short form. We believe the short form should be limited to the basic questions needed to obtain an accurate population count. For example, we believe that the questions about plumbing and the value and rent of housing units increase the questionnaire's complexity and thus tend to discourage responses.

Despite the fact that the short form was not as short as we recommended in our report Programs to Reduce the Decennial Census Undercount (GGD-76-72, May 5, 1976), the response rate for the short form was better than the long form--39 percent versus 31 percent. This differential in the mail response rate for the short and long forms was consistent with the experience in the hard to enumerate areas in the 1980 census. The Tampa pretest results were similar. The short form response was 58 percent and the long form response was 48 percent. This differential is important to keep in mind considering the Bureau's latest estimate that it could save $5 to $6 million in the decennial census for every 1 percent of increased questionnaire mail response which would therefore preclude followup activity.

The 1985 Jersey City pretest indicates that there is a greater productivity in the followup enumeration for the short forms than for long forms. Preliminary data shows that

enumerator productivity was about 37 percent higher for short forms than for long forms. This is an important factor not only because of cost consideration but also because of the difficulty in obtaining a sufficient number of competent enumerators in the last census and in the Jersey City pretest.

Another factor favoring a short form is the amount of follow-up needed for unacceptable mailed-back long forms as compared to the short forms. In the 1980 census 36 percent of the mailed-back long forms were considered unacceptable (failed edit) and required follow-up. This contrasted with only 13 percent failed edit for the short form.

The mail-back response for the second stage June 10, 1985, long form was 16 percent, which is considerably lower than the 31-percent response for long forms mailed back in the non-test portion of Jersey City. However, the results of the Jersey City pretests are inconclusive and the test was of limited value for a number of reasons.

The second stage long form repeated 10 questions which the respondents had been asked in the first stage short form. The form also repeated seven questions for each household member. In addition, most of the nonrespondents to the first stage short form were visited by enumerators to obtain the same information requested by the second stage long form. This probably discouraged many of the potential second stage respondents.

The Census Bureau did not attempt to publicize the second stage. The June 10 outreach was limited to a booth at a festival in the city, and the Bureau prepared a press release

which appeared in two local newspapers. The person responsible for outreach said basically there was "nothing out there" in terms of outreach for the second stage, no literature distribution, nothing targeted. Moreover, there was limited upfront publicity about the second stage advising the Jersey City residents that some would be receiving a second questionnaire.

The Bureau did not determine why the first stage response rate of 38 percent was far less than the 60 percent anticipated. A limited test of interviewing the nonrespondents was hurriedly planned for both the Jersey City and Tampa pretests. The sample size goal of 200 for each location was too limited to derive valid statistical results. In fact, the number of actual interviews was 109 in Jersey City and 158 in Tampa.

In addition, the Census Bureau will never really know the reason why the two-stage test failed because it does not intend to find out why the stage-two respondents did not mail back their questionnaires. The Bureau does not plan to do any evaluations; and no interviewing of the stage-two nonrespondents was planned.

Tampa

As previously discussed, a major objective of the 1985 pretest in Tampa was to test the use of optical mark reader equipment. In addition, the Tampa pretest included other evaluations such as the use of reminder cards.

In our report A $4 Billion Census in 1990? Timely Decisions on Alternatives to 1980 Procedures Can Save Millions (GAO-82-13, February 22, 1982), we recommended that the Bureau test the

feasibility of using mail reminder cards and follow-up mailings for nonrespondents. This recommendation was intended to reduce the need for personal visit interviews for the 1990 census.

We are somewhat concerned that the Bureau's mail card follow-up testing in Tampa did not include a multiphased follow-up approach. Response to the initial questionnaire mail-out was 56 percent in Tampa. The Bureau sent reminder cards to about half of the nonrespondents. The cards generated a net 3.8 percent increase in responses. Even with the increase in responses, enumerators still had to make door-to-door collections for about 40 percent of the Tampa questionnaires. In view of the Bureau's estimate that each 1-percent increase in the response rate will save $5-6 million in 1990, we believe the Bureau missed an opportunity to test the impact of a multiphased mail follow-up designed to achieve a greater overall mail response rate. A multiphased follow-up would involve two to three mailouts designed to encourage nonrespondents to return their questionnaires, prior to the Bureau beginning door-to-door collections. At least one of the reminders should include another questionnaire in case the original questionnaire was discarded.

In conjunction with the Tampa pretest, the Bureau is currently testing procedures to assist it in determining the feasibility of adjusting the raw census counts. The main features of the test include a post enumeration survey and an attempt to match the survey population results to the pretest population results using automated matching techniques.

Matching, as discussed in our report Procedures to Adjust 1980 Census Counts Have Limitations (GGD 81-28, December 24, 1980), was a major problem in prior attempts at coverage evaluation/adjustment.

Because of the importance of these tests to possible population adjustments, we plan to closely monitor the Bureau's activities.

1986 tests

During 1986, the Bureau will conduct several tests with different procedures and activities being stressed. Two pretests are planned--one in Los Angeles and the other in eight rural counties in Mississippi, including an Indian reservation. Both pretests will stress the use of decentralized data processing and combined collection/processing offices. I have already commented about these tests as they relate to automation.

Other activities to be tested include the delivery of questionnaires (Mississippi), ways to structure temporary jobs to reduce turnover (Los Angeles), improved methods for enumerating an Indian reservation (Mississippi), and continued work on testing procedures to adjust the raw census counts (Los Angeles).

We have also noted that the Bureau has made some changes in its proposed short form questionnaire for the 1986 pretests. For example, the question on plumbing was deleted and placed on the long form, some other questions were combined, other

questions expanded, and some were modified. Overall, the size of the form or content was not reduced.

Another test scheduled for 1986 is the Bureau's national content test. In that test various types of questions or versions of questions will be tested. We plan to closely monitor these activities in the ensuing year because of their possible influence on the decisions to be made for the next census.

RESIDENCY RULES

Where should persons who are counted be tabulated, and who should be included in the totals for apportionment purposes are basic issues in a decennial census. Traditionally, residency rules have been relatively constant and have followed the basic rules laid down in the First Census Act of 1790. The concept of usual residence has been fundamental in all past censuses. This is generally construed to mean the place where the person lives and sleeps most of the time. On the basis of current proposals, the Bureau will retain its basic residency rules.

The usual place of residence is not necessarily the same as a person's legal residence, voting residence, or the place where he or she happens to be staying on Census Day. For example, individuals from the United States who are abroad for an extended period of time are not included in the counts for apportionment purposes. Thus, a member of the Armed Forces who is assigned abroad and who may maintain a permanent legal address in this country and vote using an absentee ballot, is not counted for apportionment purposes. Moreover, a member of

the Armed Forces assigned to a domestic base or port is counted at that location regardless of his preservice residence or voting residence. A college student has traditionally been counted in the locality in which he resides while attending school.

Some states and locations can gain an advantage or be at a disadvantage because of these rules. For example, a state which has large military bases or ports, such as Virginia would gain from the Bureau's rules. Some states which have more college age students than college enrollment opportunities within that State (net college student migration) will be at a disadvantage for apportionment purposes.

On the other hand, decennial census counts are used for purposes other than apportionment, such as fund distributions. The larger the populations, the greater burden on the state or community for services needed. On that basis, the usual home rule has merit regardless of legal or voting residence.

There are other factors to consider in pondering the appropriateness of the rules. These include the ability to obtain accurate information with a reasonable cost and the relative size of the population groups under consideration. For example, there is no good source of data for the number of U.S. citizens overseas who are not affiliated with the federal government. Locating them would be difficult.

There is no simple formula for residency rules. The Bureau has followed our forefathers' resolve as laid down in the 1790 Act, and it has taken into consideration the practical

implications. Congress has not legislated residency rules in recent censuses; it has delegated that authority to the Secretary of Commerce, and it has permitted the Secretary to delegate further to the Bureau of the Census. Although the residency rules can be debated, the Bureau needs to develop its questionnaire and instructions to accommodate the rules decided on. The residency rules should be established within the next 2 years. Therefore, if the Congress wishes to involve itself in developing the rules, now is an appropriate time to do so.

RECOMMENDATIONS OF THE OFFICE OF INSPECTOR GENERAL ON ADP

In its report dated September 30, 1984, the Office of Inspector General (OIG), Department of Commerce, recommended that Bureau management support an ongoing ADP future systems design staff that would coordinate its efforts with decennial planning staffs. The OIG also recommended that the Bureau establish a formal ADP planning process which would include the development of a long-term life-cycle development plan to identify systems to be automated by 1990 and set a timetable for automation upgrade.

We support the OIG's recommendations. However, we do not currently believe that the recommendations, even if fully adopted, would expedite the Bureau's planning cycle for automation of the 1990 census. We believe that the incorporation of a life-cycle development plan, as I noted earlier, could affect the choice of equipment for data entry of the 1990 census because of the factors affecting the disposition of the equipment after the census.

To update the status of the Bureau's actions, we note that the Bureau designated a chief of the ADP Planning and Acquisition staff effective March 10, 1985. The Bureau specified that the functions and staff of the former long-range ADP planning staff, which had been disbanded in 1983, were reassigned to the ADP Planning and Acquisition staff.

The former long-range ADP staff reported to the Bureau's Deputy Director. The new staff will report to the Assistant Director for ADP, which is two levels below the Office of the Deputy Director. Because of this lower position in the organization, the current staff's influence and independence may be reduced. In that environment it will be difficult for the new staff to influence the planning of the automation of the 1990 census. This is discouraging if the Bureau is to achieve an integrated ADP operation.

OBSERVATIONS AND SUGGESTIONS

The Census Bureau's efforts in the 1985 pretests were useful in studying the automation of clerical activities associated with collection operations and determining the feasibility of early data capture. However, because the Bureau did not start vigorous planning and research early, as we have continually suggested, it has not maximized its opportunities in the pretests. It did not

--incorporate into its pretest planning the long lead time needed for automation acquisition,

--adequately design the census questionnaire to encourage item response in its Tampa pretest of the optical mark reader,

--formally evaluate the use of a long form that could be separated to permit data entry using the optical mark reader,

--properly test the two-stage census using a streamlined short form and a long form which does not repeat, except for needed linkage, questions in the short form,

--adequately evaluate the reasons for nonresponse in the 1985 pretests, and

--test the effectiveness of a multiphased mail followup scheme, including the sending of another questionnaire, to questionnaire nonrespondents.

Additionally, the Bureau is seriously considering the use of data keying, the most expensive, slowest, error prone, and labor intensive of the data entry options. On the other hand, it is not seriously evaluating the use of desktop optical mark reader equipment, which could have multi-purpose use after the census.

In order to develop the best 1990 census, we believe the processing technology, the collection methodology, and the questionnaire content and design must all be compatible and synergistic; and that significant changes in equipment, procedures, and forms should be adequately tested and evaluated. However, in view of the short planning time remaining, we believe the Bureau cannot afford the luxury of testing all the potential improvements in its formal pretests. Pretests require about a year for preparation, are expensive, and involve enumerator followup activities which are not a

requisite for all testing. We believe the Bureau should use special purpose tests to adequately evaluate (1) the potential of different types of data entry equipment (2) questionnaires, specifically a short simplified form and (3) procedures, including a two-stage census. Such tests could be completed months ahead of the 1986 pretests (field activities would not be required) and would provide the Bureau an opportunity to make up for some lost time in its decision making process.

Mr. Chairman, this concludes my prepared statement. We will be happy to respond to any questions.

Mr. GARCIA. Thank you very much.

Mr. Sherman M. Funk, inspector general, United States Department of Commerce.

STATEMENT OF SHERMAN M. FUNK, INSPECTOR GENERAL, U.S. DEPARTMENT OF COMMERCE

Mr. FUNK. Mr. Chairman, Mr. Hansen, Mr. Myers, thank you for the chance to appear before you to discuss our assessment of the Census Bureau's preparations for the 1990 decennial census.

With your permission, I would like to furnish the full text of my prepared testimony for the record and present a very abbreviated summary.

Mr. GARCIA. Without objection, certainly.

Mr. FUNK. I might say, a couple of weeks ago, I came across a survey report which claimed that witnesses on the Hill who prepared the abbreviated versions ended up spending 60 percent more time than on their unabbreviated versions. I will try not to fall into that trap. [Laughter].

My comments today will cover the extent to which my office is monitoring the 1990 decennial, the Bureau's efforts to improve automation of decennial activities, the projected cost of the decennial, and the 1985 decennial pretests.

Before discussing these areas, however, I would like to note some concerns I have about the potential for improper hiring of census personnel, and for improper use of census personnel data, based on partisan political considerations. In one widely publicized case, an investigation of ours resulted in the conviction and imprisonment of a former census district manager for illegal political activities during the 1980 decennial. We showed that census employment in his office had been offered in return for activities on behalf of local politicians. This was the first case ever successfully prosecuted for illegal patronage practices in the Bureau. We also investigated a number of similar allegations in other district offices, enough to convince us that—although it by no means reflected a national

problem—the Census Bureau was not sufficiently sensitive in 1980 to the danger of such abuse.

About 300,000 temporary employees will be hired by the Bureau for the 1990 decennial, and their names will be included on automated lists. I would hope that safeguards are built into the system to assure that, regardless of which party holds the administration in 1990, these lists will not be used as an assembly line for campaign workers in 1992.

Census data must not only be accurate and collected without partisan bias, but the American public must perceive it to be so. I advised Department and Bureau officials of my concerns in this area, and I have been assured that they feel as I do. In the next few years, our reviews will determine whether the Bureau is taking adequate action to preclude illegal political activity in connection with the 1990 census.

With regard to monitoring preparations for the 1990 census, we have audited various aspects of these preparations during the last 3 years. Based on our audit results, the Department reported to the President last December that decennial planning represented a major internal control weakness.

In fiscal year 1983, we expressed concerns about census oversight and planning. We stressed that the Bureau plan early for the 1990 effort. We were concerned with the lack of formal plans and documentation, and the uncertainty of almost everyone interviewed about 1990 milestones and the sequencing of activities.

It was not until February 1985 that a 1990 decennial master plan was issued, and the Bureau still has no automation master plan. The apparent lack of progress is especially disturbing considering the time it has taken for major census system changes. The Bureau and the Department of Commerce historically have taken 4 to 5 years to make automated equipment available for use after a need was identified. I might add that the Grace Commission emphasized in one of its reports that the acquisition of ADP equipment is not something the Government tends to do well. Now, of course, less than 3 years remain before the 1988 dress rehearsal.

The Bureau appears to be caught in a repetitive cycle which impedes making major improvements to the decennial process. Early in the decade, plans begin for greater automation of the next decennial census. About midway through the decade, it becomes apparent that ADP procurement leadtime considerations, together with difficulties in pinning down system requirements early enough, make it virtually impossible to complete an adequate new census systems procurement. Then relatively quick fixes are sought; these may represent significant advances, but they tend not to come to grips with basic problems.

The decennial year arrives. Everybody at the Bureau works at a fever pitch, focusing normally on brush fires, not the long-term problems. There is a kind of a letdown in planning for several years after the decennial, partly in reaction to the massive workload, partly to concentrate on tabulating and getting out decennial data, and partly to complete other census work such as the economic census. Then, planning begins for the next decennial and the cycle repeats.

In fiscal year 1984, we audited Census' efforts to upgrade its ADP equipment and methodologies. Our audit determined that improvements are needed in decennial automation, data capture, geographic support system development, address data base development, followup on nonrespondents, and coverage improvements.

Our review also indicated that Census had not determined cost-saving opportunities for the 1990 decennial. Nor had it prepared adequate documentation on decennial methodologies. Since then, the 1990 decennial master plan was issued, which is an admirably ambitious and comprehensive plan, and that established milestones for resolving some of our concerns. In addition, we obtained tentative management commitments to reduce selected decennial expenditures.

Decennial costs are expected to decrease in data capture, geographic support, address list preparation and some of the improvement programs. However, census management has also advised us that expected increases in 1990 processing and data requirements will cost almost as much as the expected savings.

This fiscal year, we reviewed 1980 and projected 1990 decennial costs. The 1980 census was extremely expensive compared to prior censuses. The 1960 census cost $128 million; the 1970 census $221 million and the 1980 census over $1 billion. Based on 1970 decennial costs adjusted for the increases in housing units and inflation, the 1980 decennial should have cost between $500 and $600 million. We were advised by census management that there is currently no management study justifying the extraordinary increase in cost from 1970 to 1980.

We believe that additional cost controls are needed to analyze and control 1990 spending. An important first step is to construct a cost baseline for 1990. Decennial cost increases from 1970 through 1980 should be reviewed to determine which ones provided improved census coverage and which ones did not. A cost-benefit analysis should be performed for each of the 51 improvements that substantially increased decennial costs from 1970 to 1980.

In addition, a cost-benefit analysis is needed for each proposed substantial increase in decennial deliverables or processing from 1980 to 1990. Together, these analyses should help in the development of a solid cost baseline for 1990.

We completed an initial assessment of the 1985 tests conducted in Tampa and Jersey City. Our assessment focused on how the Bureau handled the nonresponse portion of the census enumeration. On the basis of our limited work, we have reservations about the extent of the Bureau's commitment to experiment with new techniques to reduce the cost of following up on nonrespondents. Followup is estimated to cost about $6 million nationally for each percentage point of households which do not return their questionnaires by mail.

Specifically, we found a failure to experiment with using the telephone to reduce door-to-door followup. In 1982, the then Under Secretary for Economic Affairs stated that alternatives for following up on nonrespondents, such as more use of the phone, would be carefully examined. And yet, during the 1985 tests, the Bureau did not utilize telephones or any other technique designed to reduce costs associated with door-to-door followup. I do not mean to under-

state the difficulties here. We recognize that there are major logistical and technological problems involved in trying to cross-match address lists with telephone numbers, particularly in the case of multiunit dwellings. Nevertheless, we feel that experimentation with new techniques in the 1985 tests would have given the Bureau additional time to refine innovative approaches prior to 1990.

Also, we found that different standards were developed locally to measure productivity at each of the test locations. For example, in Jersey City, crew leaders told us that enumerators were expected to complete nine questionnaires in an 8-hour day, while in Tampa, we were told that the standard was 15. Crew leaders in Jersey City told us that any questionnaires completed above nine were counted for the next day's production. Inasmuch as hours worked were based on the number of questionnaires completed, we do not know whether enumerators actually worked all of the hours for which they were paid.

Further, enumerators were allowed to schedule their own work hours for followup visits to households. Allowing enumerators to schedule their own hours contributed to the need for return visits. We found, for example, that visits were being made in the early afternoon, a time which has been shown to be unproductive.

The foregoing are examples where cost savings could be achieved through experimentation and better management of the enumeration process. We urge the Bureau to use the 1986 test for experimentation and to test new techniques to reduce costs.

In summary, we recognize that it is indeed easier to criticize than to take a decennial census. Census officials and employees are currently working extremely hard preparing for 1990. However, we believe that timeframes are so short that major system advances may not be made.

The following improvements in the Census ADP systems development are needed.

The long-range ADP planning group should be expanded and headed by a senior executive experienced in major systems development. The staff's responsibilities, which are now largely operational, should be restricted to ADP planning and systems development. Ten years from now, the Bureau should not be in the same position regarding automation for the 2000 decennial as it is now in 1985 regarding the 1990 decennial.

An automation master plan and other required systems documentation should be prepared. Decisions on automation tasks and milestones need to be made. The plan should identify ADP systems life cycles, determine needed improvements in census automation and specify which projects can be completed by the 1990 decennial and which ones will take longer.

Census ADP systems development should be a continual process which accommodates, but is separate from, the decennial process. The Bureau will experience continuing difficulties developing ADP systems if, every decennial, it deemphasizes systems development for several years to prepare for and take the census. A major goal should be the breakout of the cycle I described earlier.

A systems engineering firm that specializes in providing oversight assistance for major systems development should be hired.

The firm's first task should be to develop a census automation master plan and life-cycle development documentation.

As far as costs are concerned, the decennial census apparently is an endeavor that can cost almost anything depending upon the enumeration and processing methodologies selected. Careful analysis of the past and future spending is essential to keeping the cost of the census under control.

Incidently, we understand that projected decennial expenditures through fiscal year 1986 are more than 10 times decennial expenditures through 1976. To the extent that this reflects better preparatory work, it may well represent a justifiable increase. With regard to the 1986 tests, the Bureau must experiment with new techniques to improve decennial coverage at reduced costs and improve its enumeration management.

Census management has been very responsive to our suggestions for improved decennial cost controls. We currently are waiting for comparable commitments from census management to improve automation planning.

Our work during the next few years on decennial preparations will continue to focus on the realism and effectiveness of the Bureau's actions to deal with cost, automation, and overall planning. For the 1986 test in Los Angeles, we will conduct a special review of the manner in which the Bureau approaches the minority undercount. The great diversity and size of the minority population of Los Angeles should give the Bureau a realistic idea of its ability to deal with the undercount issue.

Mr. Chairman, this concludes my prepared comments and, of course, I will be happy to answer questions.

[Statement follows:]

STATEMENT OF SHERMAN M. FUNK, INSPECTOR GENERAL, UNITED STATES DEPARTMENT OF COMMERCE

Mr. Chairman and Members of the Subcommittee, I would like to thank you for this opportunity to appear before you and discuss our assessment of the Census Bureau's preparations for the 1990 decennial census. My comments will cover the extent to which my office is monitoring the 1990 decennial, the Bureau's efforts to improve automation of decennial activities, the projected cost of the 1990 decennial, and the 1985 decennial pretest.

Before discussing these areas, however, I would like to note some concerns I have about the potential for improper hiring of census personnel, and for improper use of census personnel data, based on partisan political considerations. In one case which received extensive media coverage, our investigation of the former manager of a Census district office resulted in his conviction and imprisonment for illegal political activities during the 1980 decennial. Working with the Department of Justice, we provided evidence that Census employment had been offered to several persons in return for a wide range of activities on behalf of local politicians. This was the first case ever to be successfully prosecuted involving illegal patronage practices in the Bureau. We also investigated a number of similar allegations in other district offices, enough to convince us that -- although it by no means reflected a nationwide problem -- the Census Bureau was not sufficiently sensitive in 1980 to the danger of such abuse.

About 300,000 temporary employees will be hired by the Bureau for the decennial census and their names will be included on automated lists. I would hope that safeguards are built into the system to assure that, regardless of which party holds the Administration in 1990, these lists will not be used as an assembly line for campaign workers in the 1992 election.

The decennial census develops information that is of critical importance to the nation -- politically, socially, and economically. It is central to the House reapportionment process. Census data must therefore not only be accurate and collected without partisan bias, but the American public must perceive it to be so. I advised Department and Bureau officials of my concerns in this area, and have been assured that they feel as I do. During the next few years, our reviews will determine whether the Bureau is taking adequate action to preclude illegal political activity in connection with the 1990 census.

With regard to monitoring preparations for the 1990 census, we have audited various aspects of these preparations for the last three years. Based on our audit results, the Department reported to the President in December 1984 that decennial planning represented a major internal control weakness.

In fiscal year 1983, we expressed concerns about census oversight and planning. We stressed that the Bureau plan early for the 1990 effort. We were concerned with lack of formal plans and documentation, and the uncertainty of almost everyone interviewed about 1990 milestones and sequencing of activities. Our audit disclosed that the Bureau had not established a planning and control system to oversee and manage the 1980 decennial as late as 2-1/2 years prior to that census. Also, the Bureau devoted substantial time and resources over a seven-year period to increasing the use of improved automation techniques in the 1980 census. However, the Bureau fell behind schedule for acquiring and installing improved ADP capabilities and in 1977 decided to use the existing computer configuration to process the 1980 census.

The Bureau has indicated that it would take steps to prevent the repetition of these problems. However, it appears that the Bureau again may experience many of the pitfalls of the 1980 census, inasmuch as 1990 planning activities have been slow in developing. It was not until February 1985 that a 1990 decennial master plan was issued, and the Bureau still has no automation master plan. The apparent lack of progress is especially disturbing considering the time it has taken for major census system changes. The Bureau and the Department of Commerce historically have taken four to five years to make automated equipment available for use after a need was identified. (This problem is not unique to Commerce. The Grace Commission has pointed out that one of the things the Federal Government does not do well is timely acquisition of ADP equipment.) Less than three years remain before the 1988 dress rehearsal.

In fiscal year 1984, we audited Census' efforts to upgrade its ADP equipment and methodologies. The Bureau appears to be caught in a repetitive decennial cycle that impedes making major improvements to the decennial process. Early in the decade, plans begin for greater automation of the next decennial census. About midway through the decade, ADP procurement lead-time considerations, together with difficulties in pinning down system requirements early enough, make it virtually impossible

to complete an adequate new census systems procurement. Then relatively quick fixes are sought, which may represent significant advances, but do not come to grips with basic problems. The decennial year arrives. Everyone in the Bureau works at a feverish pitch, focusing on immediate brush fires, not the long-term problems. There is a slowdown for several years after the decennial, partly as a reaction to the massive workload, partly as a need to concentrate on tabulating and getting out decennial data, and partly to complete other census work such as the economic census. Then, planning begins for the next decennial and the cycle repeats.

Our audit determined that improvements are needed in decennial automation, data capture, Geographic Support System development, address data base development, follow-up on non-respondents and coverage improvement. Details on the deficiencies follow.

DECENNIAL AUTOMATION

A key problem that the Bureau faced during past decennials and faces again for the 1990 census is the lack of an ongoing ADP system design and development staff. In effect, how does the Bureau break out of the cycle I previously described? For the 1990 decennial, the Bureau established the Future Systems Design Staff to direct and implement a fully integrated census automated data processing and telecommunications system. In January 1983, the staff was disbanded for reasons that are unclear.

Bureau management advised us they were concerned about elimination of the Future Systems Design Staff in 1983 and the lack of central long-range ADP planning. We were told that Census had been trying for several months to address the problem. The reason given for the delay in establishing a Long-Range ADP Planning Staff, the successor to the Future Systems Design Staff, was the difficulty in obtaining a suitable individual to head the staff. The Bureau ultimately gave up trying to hire a senior executive to head its long-range ADP planning and instead assembled a staff of four professionals headed by a GM-15. The staff is reporting to the current Assistant Director for ADP.

We were advised that the staff's procurement duties have kept it from doing ADP planning work. We consider the staff an inadequate replacement for a senior executive and eight staff members of the prior Future Systems Design Staff.

The lack of an automation master plan is another major weakness in the Bureau's efforts to improve its data processing systems. ADP master plans guide the process of administering automated systems throughout their existence. Without a master plan, the Bureau may (1) encounter a prolonged acquisition process for ADP equipment, (2) be unsuccessful in its efforts to achieve compatibility in ADP systems, (3) pay too much to procure computers, and (4) design inefficient and duplicative systems. The Bureau needs normal systems documentation to support its ADP development efforts. This includes an automation master plan, life-cycle cost control plans, ADP system product guidelines, and life-cycle systems development and implementation plans. The Bureau's decennial master plan milestones on automation and its annual information technology plans, although useful, are no substitute for a long-range automation master plan and systems life-cycle documentation.

We believe that the Bureau also needs to solicit the services of non-Bureau ADP management expertise (e.g., a systems engineering contractor) to assist in developing 1990 systems requirements and operating concepts. The Bureau's need for ADP management assistance is supported by its (1) limited and fragmented approach toward improving ADP systems, (2) lack of current systems documentation, and (3) deficient ADP planning. Typically, a systems engineering contractor provides technical support services throughout the design and development of a major ADP system. This includes:

- Preparing systems documentation, analyses and work plans.
- Developing new systems requirements and operating concepts.
- Providing program management technical support.
- Preparing software and hardware acquisition plans.
- Assisting with quality assurance.

The Bureau's need for outside ADP assistance also has been cited by GAO in its January 11, 1983, report entitled, "The Census Bureau Needs to Plan Now For a More Automated 1990 Decennial Census." The Bureau's response to GAO stated that "greater attention would be given to the use of non-Bureau expertise to assist the Bureau in planning the 1990 activities, including the use of automation and application of state-of-the-art technology." The Bureau has yet to procure the services of a systems engineering firm to assist in providing oversight for the overall ADP systems development effort (including improving census ADP planning and documentation).

FOSDIC DATA CAPTURE SYSTEM

The FOSDIC data capture system was designed to transfer data from census questionnaires to computer records. FOSDIC includes the camera systems for photographing census documents, the film developing system, the film reading system and the transmission and receipt of the data in machine-readable form at the Bureau's main computer processing section. Bureau personnel stated that no final decision for improving the data capture system has been reached. The decision-making process will not be completed until late 1986. We are concerned that centralized FOSDIC systems once again could be chosen as the primary data capture system for the decennial census. If so, high costs and labor-intensive activities will continue.

In 1980, the Bureau spent $106 million preparing questionnaires for data capture. Another $115 million was spent on data capture at the Bureau's three processing centers. The data capture process required thousands of employees to perform numerous time-consuming and labor-intensive clerical activities. The Bureau is exploring automated methods of capturing data in the field rather than at centralized processing centers. The sooner the data are captured on computer media after collection by census takers, the more manual processes (such as editing) can be automated. Although FOSDIC was used effectively for three decennials (in 1960, 1970 and 1980), there are drawbacks to expanding it for decentralized use. First, FOSDIC is custom built and would be difficult to obtain for all Bureau field offices. Second, FOSDIC does not offer automated back-up capabilities in the event of system failure; a redundant system apparently would be required at each location. Finally, we found that FOSDIC would need upgrading to be used for the 1990 decennial.

Discussions with Census ADP engineering personnel revealed that research and development work is improving automated data capture systems. Optical mark recognition and online editing/keying were used in the 1982 economic census. It would appear that, for 1990, the Bureau is moving toward some mix of FOSDIC, direct data entry and, depending upon the 1986 pretest, OMR. However, ADP and planning personnel disagree at this time on their ability to meet future data capture improvement milestones and deliver potential systems.

AUTOMATED GEOGRAPHIC SUPPORT SYSTEM

The Bureau planned to have its geographic system fully automated by the end of fiscal year 1987. We noted that milestones passed without receipt of scheduled deliverables. Simply put, the automated Geographic Support System will help control census data collection by producing geographic maps, assigning geographic location codes to addresses to be surveyed by enumerators, and supporting related systems for questionnaire check-in, control and follow-up. During 1980, difficulties were encountered in the geographic support process. Poor quality maps were produced that could not be used by the census takers. As a result, the 1980 process caused the Bureau to spend millions of additional dollars and the enumeration process was delayed. The higher costs were due to: greater complexity in the geographic products than predicted from prototypes; confusion from late or incomplete specifications and procedures; slower than expected production caused by large numbers of inexperienced personnel; large amounts of overtime to make up for slow production; and general disorganization in the flow of materials caused by inadequate control systems.

At the time of our audit, Bureau personnel stated that the automated Geographic Support System schedule had slipped a year due to slow hardware procurements. We are concerned that this and any such further slippages may delay timely implementation of the system.

AUTOMATED ADDRESS DATA BASE

Another issue relating to the Geographic Support System is that the Bureau has not developed an up-to-date automated address list. For the 1980 decennial, approximately $100 million and

four years of effort were expended to compile a national mailing list. If this system is not improved, inflation and continued population growth could drive address costs for the 1990 decennial to somewhere in the neighborhood of $250 million. The 1980 mailing list was developed by purchasing address listings from commercial firms for major areas and physically canvassing rural and small urban areas. Unfortunately, the purchased lists provided fewer and less accurate addresses than expected. The mailing lists were updated by further canvassing and using Postal Service checks for accuracy and completeness. However, the Bureau encountered operational problems that hampered canvassing operations and Postal Service reviews.

Because the 1980 mailing list and subsequent corrections to the list were prepared manually, no automated address file was created. For 1990 and subsequent censuses, the Bureau should develop an automated address data base that incorporates programmed controls to ensure that census and post-census operations are supported by accurate address information.

FOLLOW-UP ON NONRESPONDENTS AND DECENNIAL IMPROVEMENTS

At a cost of $145 million, follow-up actions were among the most costly and inefficient used during the 1980 decennial. To obtain a more complete and accurate 1980 census, census takers went to each household that failed to respond to a census questionnaire. Because door-to-door follow-up is so expensive, the Bureau needs to explore and identify less costly procedures such as improving pre-census publicity to obtain a higher response rate for mailed questionnaires, sending follow-up questionnaires ("second wave mailings") or, possibly, some form of telephone-assisted follow-up.

Decennial improvements also were among the most costly decennial census operations. The Bureau spent a total of $370 million for 51 improvements aimed at upgrading 1980 census coverage. Not all of the 1980 improvements produced the desired results. For example, in 1980, lists were obtained from departments of motor vehicles to identify persons in areas of concentrated minority populations. Individuals were matched to census lists and nonmatches were followed up. The Bureau

spent $6.3 million in hopes of adding between 400,000 to 900,000 individuals. However, only 130,000 names were added, costing almost $50 per person. The Bureau needs to critically analyze follow-up and improvement procedures used during 1980 to determine which ones proved to be the most effective.

1990 DECENNIAL COSTS

Our 1984 review indicated that Census had not determined cost-saving opportunities for the 1990 decennial and had not prepared adequate documentation on decennial methodologies. Since then, the 1990 decennial master plan was issued which established milestones for resolving our concerns. In addition, we obtained tentative management commitments to reduce selected decennial expenditures. Decennial costs are expected to decrease in data capture, geographic support, address list preparation and some improvement programs. However, Census management also advised us that expected increases in 1990 processing and data requirements will cost almost as much as the expected savings.

This fiscal year, we reviewed 1980 and projected 1990 decennial costs. The 1980 census was extremely expensive compared to prior censuses. The 1960 census cost $128 million, the 1970 census $221 million and the 1980 census over $1 billion. Based on 1970 decennial costs adjusted for the increases in housing units and inflation, the 1980 decennial should have cost $500-600 million. We were advised by Census management that there is currently no management study justifying the extraordinary increase in decennial costs from 1970 to 1980.

We believe that additional cost controls are needed to analyze and control 1990 spending. An important first step is to construct a cost baseline for 1990. Decennial cost increases from 1970 to 1980 should be reviewed to determine which ones provided improved census coverage and which ones did not. A cost/benefit analysis should be performed for each of the 51 improvements that substantially increased decennial costs from 1970 to 1980.

In addition, a cost/benefit analysis is needed for each proposed substantial increase in decennial deliverables or processing from 1980 to 1990. Together, these analyses should help in the development of a solid cost baseline for 1990.

Census management agreed to perform these cost/benefit analyses. Because of the amount of work required to complete the 1980 cost/benefit analyses, they will not be finished until fall 1986. The 1990 analyses will be done on an as-needed basis between now and 1990.

1985 PRETEST

We completed an initial assessment of the 1985 pretest conducted in Tampa, Florida, and Jersey City, New Jersey. Our assessment focused on how the Bureau handled the nonresponse portion of the Census enumeration. On the basis of our limited work thus far, we have reservations about the extent of the Bureau's commitment to experiment with new techniques to reduce the cost of following up on nonrespondents -- estimated to be at least $6 million nationally for each percentage point of households which do not return the questionnaires by mail. Specifically, we found:

- A failure to experiment with using the telephone to reduce door-to-door follow-up. In 1982, the Under Secretary for Economic Affairs stated that alternatives for following up on nonrespondents, such as more use of the phone, would be carefully examined. Yet during the 1985 pretest, the Bureau did not utilize telephones or any other technique designed to reduce costs associated with door-to-door follow-up. I do not mean to understate the difficulties here. We recognize that there are major logistical and technological problems involved in cross-matching address lists with telephone numbers, particularly in the case of multiunit dwellings. Nevertheless, we feel that experimentation with new techniques in the 1985 pretest would have given the Bureau additional time to refine innovative approaches prior to the 1990 decennial.

- Different standards were being used to measure productivity at each of the pretest locations. For example, in Jersey City, crew leaders told us that enumerators were expected to complete nine questionnaires in an eight-hour day, while in Tampa, we were told the standard was fifteen. Crew leaders in Jersey City told us that any questionnaires completed above nine were counted for the next day's production. Inasmuch as hours worked were based on the number of questionnaires completed, we do not know whether enumerators actually worked all of the hours they reported.

- Further, enumerators were allowed to schedule their own work hours for follow-up visits to households. Allowing enumerators to schedule their own hours can contribute to the need for return visits. We found visits being made in early afternoon--a time which has been shown through studies to be unproductive.

The foregoing are examples where cost savings could be achieved through experimentation and better management of the enumeration process. We urge the Bureau to use the 1986 pretest for experimentation and to test new techniques to reduce costs. It appears that the objective of the Bureau was essentially to complete the 1985 pretest on schedule. To do this, reliance was placed on old and proven techniques rather than new, and perhaps more cost-effective, approaches.

SUMMARY

In summary, we recognize that it is easier to criticize than to take a decennial census. Census officials and employees currently are working hard preparing for the 1990 decennial. However, we believe that time frames are so short that major systems advances may not be made. The following improvements in Census ADP systems development are needed:

- The long-range ADP planning group should be expanded and headed by a senior executive experienced in major systems development. The staff's responsibilities should be restricted to ADP planning and systems development. Ten years from now, the Bureau should not be in the same position regarding automation of the 2000 decennial as it is in 1985 regarding the 1990 decennial.

- An automation master plan and other required systems documentation should be prepared. Decisions on automation tasks and milestones need to be made. The plan should identify ADP systems life-cycles, determine needed improvements in census automation, and specify which projects can be completed for the 1990 decennial and which ones will take longer.

- Census ADP systems development should be a continual process which accommodates, but is separate from, the decennial process. The Bureau will experience continuing difficulties in developing ADP systems if, every decennial, it deemphasizes systems development for several years to prepare for and take the census.

- A systems engineering firm that specializes in providing oversight assistance for major systems development should be hired. The firm's first task should be to develop a census automation master plan and life-cycle development documentation.

As far as costs are concerned, the decennial census apparently is an endeavor that can cost almost anything depending on the enumeration and processing methodologies selected. Careful analysis of past and future spending is essential to keeping the cost of the census under any semblance of control. Incidentally, we understand that projected decennial expenditures through fiscal year 1986 are more than ten times decennial expenditures through 1976. To the extent that this reflects better preparatory work, it may well represent a justifiable increase. With regard to the 1986 pretest, the Bureau must experiment with new techniques to improve decennial coverage at reduced costs and improve its enumeration management.

Census management has been very responsive to our suggestions for improved decennial cost controls. We currently are waiting for comparable commitments from Census management to improve automation planning.

Our work during the next few years on decennial preparations will continue to focus on the realism and effectiveness of the Bureau's actions to deal with cost, automation and overall planning. For the 1986 pretest in Los Angeles, we will conduct a special review of the manner in which the Bureau approaches the minority undercount. The great diversity and size of the minority population in Los Angeles should give the Bureau a realistic idea of its ability to deal with the undercount issue.

Mr. Chairman, this concludes my prepared comments. I will be happy to answer any questions.

Mr. GARCIA. Thank you very much, Mr. Funk.

Mr. John Keane, Director of the Bureau of the Census.

STATEMENT OF JOHN G. KEANE, DIRECTOR, BUREAU OF THE CENSUS, ACCOMPANIED BY PETER A. BOUNPANE, ASSISTANT DIRECTOR FOR DEMOGRAPHIC CENSUSES

Dr. KEANE. Thank you, Mr. Chairman.

You stated at the outset of your chairmanship that you would be interested in the Census Bureau activities and you have shown it by this and other hearings.

I would like to acknowledge the presence of Congressman Hansen and Congressman Myers, too. We appreciate your continuing interest and your involvement. And also that extends to the General Accounting Office and to the inspector general's office, and to anybody else with a genuine interest in the Census Bureau and our activities, and particularly the 1990 census. We genuinely welcome their shared interest where people are trying to help us do a better job.

Now, then, this hearing is directed to several specific questions about important parts of the 1990 census. In the interest of efficiency and clarity, I would like to defer to Peter Bounpane, our Assistant Director for Demographic Censuses, to give you an overview. And if I hear nothing to the contrary, we would like to have our written statement included in the record.

Mr. Bounpane will give an overview of four specific areas which we understand are the interest of this subcommittee: Automation plans of the 1990 census; the 1985 test censuses, and that includes the address list compilation test, 1986 test census objectives, and the 1990 resident rules.

And then Mr. Bounpane and I will answer questions as you so wish.

[Statement follows:]

REMARKS OF THE DIRECTOR OF THE BUREAU OF THE CENSUS

JOHN G. KEANE

BEFORE THE SUBCOMMITTEE ON CENSUS AND POPULATION

POST OFFICE AND CIVIL SERVICE COMMITTEE

U.S. HOUSE OF REPRESENTATIVES

JULY 25, 1985

Thank you for this opportunity to present an overview of developments at the Census Bureau. I am pleased that you continue to show interest in our 1990 census planning and the other work of the Census Bureau. Today, as requested by the Subcommittee, I will discuss four major aspects of our 1990 census planning . I will begin with a progress report on our automation plans. Next, I will discuss current testing activity including the 1985 test censuses and the Address List Compilation Test. Then I will turn to the 1986 test census goals. I will conclude with comments on 1990 residence rules.

I. AUTOMATION

Increasing automation in the census can improve the accuracy of the data, lead to greater cost efficiencies, and give us more control over the entire census process. Automation in a census context can mean many things. We have identified a number of areas that are candidates for automation in the 1990 census, and have already begun to test some of them. I will discuss three of these today: the geographic support system, the address control file, and the early conversion of questionnaire data into computer-readable form.

First, for 1990, we plan to automate our geographic support system, which we call TIGER (Topologically Integrated Geographic Encoding and Referencing system). From a computerized data base, TIGER will define the physical location of all addresses and produce maps. It also will provide us with a consistent data

base that will allow us to integrate the production of the geographic materials that were produced in separate clerical operations in 1980. A more detailed discussion of TIGER is beyond the scope of this testimony, but we would be pleased to provide the committee with further details if so desired.

Another improvement planned for the 1990 census is the development of an automated address control file. With an automated address file, it will be much easier to determine whether or not we included a specific address in the file. It will be possible to update the file where we missed an address in earlier operations. It will be possible to use bar-code technology for computer check-in of the questionnaires. As a result, it will be easier for our enumeration staff to identify the addresses for which questionnaires have not been returned, and it may allow us to send reminder notices to those addresses and, thus, to reduce further the number of nonresponding housing units where we need to send enumerators. Finally, with an automated address list, we can update the list and use it in future Census Bureau operations.

In our 1985 test censuses in Jersey City, New Jersey and Tampa, Florida, the automated address control file system successfully performed the check-in of questionnaires returned by mail, generated reminder cards for nonrespondents, and helped control the field data collection work.

One of the most promising ways to take advantage of automation in the census, and our biggest challenge, is to convert the data on the questionnaires into a computer-readable format earlier in the census process than in past censuses. This approach is essential if we are going to take full advantage of automation and release data products quicker. For the 1990 census, we want to begin converting data simultaneously with the collection phase. This early start (5-7 months ahead of the 1980 schedule) will allow more time for review and correction and will enable the computer to assist in certain census operations.

It will contribute to tighter control of field follow-up assignments and allow early identification of enumeration problems. Also, computer records of questionnaires could serve as backups to the original questionnaires in case they are accidently destroyed.

Although there is agreement that we should implement earlier automated processing for the 1990 census, there are two major questions we still must answer. Where will the automated processing be conducted, and what technology will be used to convert the questionnaire data into computer-readable form?

With regard to the first question, it is helpful to consider two broad scenarios for accomplishing this early data conversion. Under one scenario, there would be combined district and processing offices which would carry out both automated processing activities and field follow-up. It is very unlikely we would use "combined" offices for the entire country because of difficulties building, installing, integrating, and monitoring 500 separate data processing systems. We will be testing a "combined" office in our 1986 test census in Mississippi.

Under the other scenario, we would have separate processing and district offices. Here, the processing offices would receive the mail-returned questionnaires from the public, check them in automatically, convert the data to machine-readable format, and perform automated editing of the questionnaires. The district offices would be responsible only for contacting households to follow up missing or incomplete questionnaires. We are testing separate processing and district offices in our 1985 test censuses, with collection offices in Jersey City, New Jersey and Tampa, Florida and processing in our permanent processing office in Jeffersonville, Indiana. In our 1986 test census in Los Angeles County, we will use separate district and processing

offices where the processing office is within the same metropolitan area as the district office. It is unlikely we would use "separate" offices for the entire country because of the communications and logistics problems that arise when the processing office is a large distance away from the district office.

Having combined processing/district offices in parts of the country with low population density and separate processing and district offices in other parts is an option being considered for the 1990 census.

In addition to deciding where to convert the data to computer-readable format for 1990, we must also determine how to do so. The choices for 1990 are basically among three technologies or various combinations thereof. We can continue to use the film-to-tape process like 1980, but with newer and better equipment. We can try to eliminate the microfilming step and read the questionnaires directly as college aptitude tests are processed using optical mark recognition technology. Or we can enter the data by keying. Keying for all data conversion in all processing locations is unlikely, but we will need to use it extensively for entering into the computer the address information and written answers on the questionnaires. In our 1985 test censuses, we used the optical mark reader and keying approaches. Although there were some problems, the optical mark reader worked well enough for us to consider the possibility of testing it further in 1986, along with keying and the film-to-tape method.

The issue of data conversion methodologies is related to, but not dependent on, the office structures discussed above. A decision on equipment also involves many other considerations such as the content and appearance of the questionnaires and the ease with which people can complete them; the reliability and

availability of the equipment; the staffing requirements imposed by the equipment both in terms of numbers of people needed and the technical sophistication those people must have; and the cost and maintainability of the equipment.

We must make decisions on these two major questions (where and how) related to data conversion by September 1986, so that we can begin the process of procuring equipment. Some have suggested that we make these decisions earlier, but we believe it is important to learn as much as possible from our test census experiences before making such major decisions. We recognize that a proper balance needs to be struck between waiting too long to decide and making decisions before all the evidence is available. We think September 1986 strikes that balance and our procurement office assures us that our acquisition schedule can be met. In fact, we are already working with the Department of Commerce and General Services Administration to be sure that all aspects of the procurement process are covered. Although we will wait until September 1986 to make some decisions, for some equipment needs we will be able to make our decisions earlier and begin equipment procurement actions.

Some of the other areas we are investigating as automation possibilities are: computerized editing of the questionnaire for completeness and consistency, automated coding of write-in answers, improved tabulation and publication systems, and more automated (and, therefore, more timely and accurate) management reports, such as cost and progress.

II. 1985 TEST CENSUS AND ADDRESS LIST COMPILATION TEST RESULTS

Mr. Chairman, I am submitting for the record a detailed status report as of July 12 for our current test activities. At this time, I will briefly discuss some of the highlights of the 1985 tests and the results of the Address List Compilation Test.

1985 Test Census Results

We consider our 1985 test censuses in Tampa and Jersey City to be successful. I say successful because we have learned a great deal of useful information from both these test censuses and that is the prime purpose of a test -- to learn. Some operations went smoothly and some had problems. The operations that went well show us that we are on the right track and how to refine our efforts in later tests. The operations that had problems show us options that are not viable or areas that need much more work.

We learned several things from our 1985 test. Of particular importance, we learned that the use of automated equipment for operations was successful in both sites. It allowed us to control the flow of questionnaires and other information for follow-up operations quickly and with a minimum of handling.

Through the use of the automated address control file in our Tampa test, we quickly identified addresses that had not returned their questionnaires and sent a mail reminder card to a sample of those addresses. Preliminary results show an increase of about 4-percent in mail response[1/] attributable to the reminder card. An increase in mail response means a decrease in the number of nonresponse housing units that require a costly personal visit to obtain data. We estimate that in 1990 a 1-percent increase above the 1980 national mail response rate will be a savings of about $6 million. A 4-percent increase nationally in 1990 could save us as much as $24 million.

In our Tampa test, we examined the feasibility of using optical mark recognition (OMR) equipment to enter short-form questionnaire data into the

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1/ Mail response rates measure the proportion of mail returns out of the total questionnaires mailed out. This count is lower than a mail return rate which excludes vacant and deleted housing units from the universe.

computer. We found this technology could be made to work well in a limited test environment. To use the OMR technology, we designed special questionnaires that the OMR equipment could read. We sent pencils out with the questionnaires so that people would mark their questionnaires with the proper writing instruments. We closely monitored and regulated the conditions in which the OMR equipment was operated. We sponsored small "focus groups" in Tampa to find out how people responded to the OMR questionnaire. We learned that participants did not react negatively to the OMR form; however, preliminary results from editing the questionnaires show that respondents had problems completing certain short-form questions such as age and sex. This appears to be a function of limitations imposed by the questionnaire design rather than the OMR technology.

We used key data entry equipment to convert all Jersey City questionnaires and the long form questionnaires from Tampa into an electronic format. While we did not formally test this technology, we did find that it functioned smoothly and efficiently. We also learned how it permits more flexibility to design a complete and attractive, respondent-friendly questionnaire.

In Jersey City, we tested a two-stage census approach and compared it to a 1980 approach to find out if it would improve the census in hard-to-enumerate urban areas. For the two-stage approach, we mailed and collected short-form or 100-percent information first; 2 months later we mailed and collected sample forms with both 100-percent and sample questions from a sample of persons. For the 1980 method, we collected both types of information at the same time. A major objective of this test was to see if first collecting just the basic 100-percent information in an area like Jersey City could expedite the overall census process. At this point, it does not appear that the two-stage method will produce a significant improvement over the 1980 system. As expected, the mail

response rate for the 100-percent information forms was higher than the mail response rate for the sample questionnaire; namely, 38.7 percent as compared to 31.4 percent (modified 1980 system). However, the mail response rate on the second stage mailing of the sample questionnaire was extremely low, only 15 percent. It appears that the initial gain in mail response rate would be more than offset by the difficulty of finishing the second stage if this kind of second stage mail response rate were typical.

Our 1985 test was the first to expand the Local Review Program from a postcensus local review, as in the 1980 census, to both a precensus and postcensus local review. We conducted the first phase of the review and are entering the second phase with no significant problems. This is a first step toward improving the local review program so that local officials will have more time to prepare their data and review our counts and also allow us to meet our cost and timeliness goals.

We found that the overall mail response rate in Tampa was about as expected and much less than expected in Jersey City. To ascertain why households did not return their census questionnaires, we conducted a small survey of 200 nonresponding households in both sites. In general, we found that lack of response was not from lack of knowledge about the census. Most respondents admitted they were exposed to census publicity, although the source and type of publicity varied by demographic groups. It appears that our future publicity efforts need to emphasize more strongly confidentiality and improve the understanding of how census results are used. This change may help to motivate people to take the test census seriously and participate.

In spite of the low mail response rates, we still completed basic census procedures earlier than we were able to complete the 1980 census in many areas.

Data collection efforts in Tampa proceeded quite smoothly and close to schedule. Jersey City has experienced some delays. Still, Jersey City's basic data collection efforts have been conducted in a much shorter time than similar areas in 1980.

The Subcommittee also has indicated an interest in the procedures for distributing Spanish questionnaires in the 1985 test. The procedures were similar to those used in the 1980 census. All questionnaires that were mailed out requested that persons wishing a questionnaire in the Spanish language should mark the indicated circle on the questionnaire and return it by mail. A Spanish questionnaire would then be mailed to them from the processing office. In the 1985 test, some persons wishing a Spanish questionnaire took advantage of the opportunity to call telephone assistance in the district offices. Since many of the operations done in a district office in the 1980 census were done in Jeffersonville in the 1985 test, it was necessary to modify the 1980 procedures for distribution of the Spanish questionnaires. In future tests, we will refine these changed procedures to avoid delays experienced in the 1985 test. In addition, we will experiment with other techniques to offer both Spanish and other foreign language assistance. For example, in our 1986 test in Los Angeles County, we will try to give foreign language help through store front census offices in multi-lingual neighborhoods.

Finally, let me discuss in more detail what we learned about our hiring problems in both test sites. Despite a large pool of qualified applicants, we had some difficulty filling all positions. People who were tested and qualified for positions sometimes refused jobs when contacted because of other commitments or they felt the length of employment was too brief. We also experienced a high turnover of enumerators. We will be working to improve this situation in future

tests. I would like to add here that our operations in central locations, or "store fronts," which were new in the 1985 Tampa test, proved to be beneficial. Crew leaders for groups of enumerators were located in these locations rather than being mobile as in previous censuses. Thus, they were consistently available to assist the enumerators. Even with the problems we experienced in hiring enumerators, we found that the success of the store front operation and the automated address control file provided for a quick and efficient enumeration.

We are now conducting a Post-Enumeration Survey in Tampa to measure census coverage. The major objective is to test new computer matching techniques. Approximately 4,500 housing units in Tampa will be included in this coverage measurement survey.

Address List Compilation Test

Since the 1960 census, we have been refining the mail-out/mail-back method of self-enumeration. In this method, a questionnaire is mailed to the housing unit and the householder is instructed to complete the questionnaire and return it by mail. As this method has become increasingly predominant, an accurate address list is essential. Additionally, the methods for developing and maintaining the address list must be cost efficient.

We have made great strides since 1960 in preparing an accurate address list. For the 1980 census, we purchased vendor address lists for 50-55 million addresses. While we found these lists a satisfactory and cost effective starting point for preparing our address list, we wanted to test alternative methods for 1990.

To evaluate the relative completeness and cost effectiveness of several combinations of address list compilation and updating procedures, the Census Bureau conducted the Address List Compilation Test (ALCT). These procedures were evaluated in four areas of the country, two rural areas and two urban areas. In the two rural areas, Hardin County, Texas and the county group of Gordon and Murray Counties in Georgia, Census Bureau employees systematically canvassed the area to prepare an address list. This list was updated by a United States Postal Service (USPS) check. It was then compared to a list created by the USPS and updated by a separate Census Bureau canvass. In Hartford and Bridgeport, Connecticut (the urban sites), the list creation sources tested were a commercial vendor list (our 1980 source in urban areas), and the list of addresses from the 1980 census. In the Hartford site, a list created by the USPS also was tested. Each of these lists was updated by either a separate Census Bureau canvass or a check by USPS.

Results of the test conducted in Hartford are now available. Early results from the Bridgeport test support the findings of the Hartford test; final results for Bridgeport will be available later this summer. Results from the two rural tests will be available later this year.

I will now summarize some of our findings from the Hartford ALCT.

First, while the USPS list did provide slightly better coverage than the vendor list, it did no better than the 1980 census list. The USPS list cost about six times more than the 1980 test census and about 20 times more than the vendor list. The high cost of the USPS list makes it an unlikely choice as a source for the initial 1990 list in urban areas. It is likely, however, that USPS knowledge will be employed for other aspects of address list preparation.

Second, the vendor list is by far the least expensive, but it also had slightly lower coverage. This result was not suprising and supports the need for the multiple updating operations that we employ when starting with a commercially developed list.

Third, in Hartford, the 1980 list updated provided the best coverage. Given that there has not been much change in the Hartford housing inventory since 1980, it is not too surprising that the updated 1980 list did well. It is reasonable to assume that the 1980 list updated would not do as well in high growth areas, but it may be a viable alternative when accurate vendor lists are not available. In addition, updating the 1980 list is relatively expensive. Increased automation of our address control file in the 1990 census may allow us to cost effectively maintain and update our 1990 lists over time for future census activities.

We will combine the results of the ALCT and the 1985 and 1986 test censuses to make a final decision on the methods of address list preparation and update by the fall of 1986.

III. 1986 TEST CENSUS OBJECTIVES

Early next spring, we will conduct our second round of test censuses in two locations. Our urban test will be held in a group of about 20 communities located in central Los Angeles County and stretching from Compton and Willowbrook, just north of Long Beach, to South El Monte, which is west of downtown Los Angeles. Our rural test will be held in 8 counties in the east central part of Mississippi around Meridian.

Our major goals for testing in 1986 are to:

- Examine new techniques for automating questionnaire processing and management and control systems using different district office/processing office configurations. (This will conclude our automation testing cycle leading to decisions in September of 1986.)
- Produce geographic products using a simulated TIGER system.
- Improve rural address list development and maintenance.
- Test new questions and wording and better design of the questionnaire package.
- Improve the Local Review Program.
- Increase and improve census promotion activities.
- Refine foreign language questionnaire procedures.
- Refine enumeration techniques for American Indian reservations.
- Examine the feasibility of adjusting census counts.

I will discuss each of these in more detail. I will also add a brief progress report on our 1986 test activities already underway.

New Processing Techniques

Our examination of new automation and questionnaire processing techniques is aimed at making the census simpler, faster, and more cost efficient while maintaining high data quality. In our Los Angeles test, we will receive and process the questionnaires at a temporary processing facility that is separate from the two district offices. We are considering a variety of alternative technologies to convert the questionnaire into a computer readable format. These technologies include updated FOSDIC equipment, key data entry, and optical mark recognition equipment. In our rural test, we will examine the feasibility of a combined district and processing office in which questionnaires are received, checked-in automatically against the address control file, and

processed immediately using key entry equipment for automated editing. These tests will provide us valuable information on district office/processing office configurations and the kinds of automated equipment that best meet our needs for 1990.

TIGER System

In 1986 we will test simulated production of computerized maps for both the Mississippi and Los Angeles sites. Specifically in the Los Angeles site, we will prepare computerized maps of various formats to find out which types are suitable for field offices.

In 1986, we will also simulate updating the TIGER data base with changes provided from data collection activities.

Rural Address List Development, Maintenance, and Questionnaire Delivery

Our main objective at the Mississippi site is to test new ways for the Census Bureau to create and maintain address lists and ensure accurate delivery of the questionnaires in rural areas where some addresses have no house number or street name (such as P.O. Box 4 or Frank Jones, Rural Route 2). First, the Census Bureau will canvass the entire area to prepare an initial address list. Next, the USPS will check the accuracy of that initial address list. The Census Bureau will then reconcile the differences between its list and the USPS corrections. In half of the Mississippi site, the Census Bureau will update the address list and questionnaires then will be delivered by the USPS. In the other half, the Census Bureau will deliver the questionnaires itself and, at the same time, update the address list.

Questionnaire Design and Content

We will examine different questionnaire designs in the two urban district offices and the rural office. We are also designing a more attractive mailing package. In addition, unlike the 1985 test, we will also test some new questions and some new wording for standard questions. Single site tests are not the best method for testing content, but some issues are so important as to require as much information from testing as possible.

We also are conducting a separate National Content Test in 1986. This will be a national survey to test proposed new questions and revised question wording.

Local Review Program

A strong Local Review Program will enhance our ability to work cooperatively with local governments which, in turn, can improve coverage. Liaisons have been appointed by the local officials to coordinate the review process between the Census Bureau and the local staff. In 1986, as in 1985, we will conduct both a precensus and postcensus local review. Unique to 1986, are the training workshops that the Census Bureau will conduct to explain the review process and how to prepare review materials. This will be the first time we have conducted such workshops. We want to see if they will enhance our Local Review Program for 1990.

Publicity

We will strengthen the census promotion program over that used in the 1985 test. We will examine methods to identify new promotional themes and try special messages to promote the census among targeted areas that had low mail return rates in 1980. We will supplement our overall census promotional efforts to include a recruitment campaign for collection and processing activities. Most

importantly, we will develop an intensified community outreach effort to work through community based organizations, state and local governments, schools, churches, and other religious organizations.

As is 1980, we expect to use the Advertising Council in the 1990 census. We would prefer to have them work with us to enhance our 1986 public service advertising campaign. We are now processing the contract. Depending on how long it takes to negotiate a contract, we may not be able to fully test some of our publicity objectives in 1986.

Spanish Questionnaire and Other Foreign Language Assistance

In our Los Angeles test, we will refine procedures to provide Spanish language questionnaires to respondents who request one. As in previous censuses, the telephone assistance operation will be equipped with instruction guides in Spanish and five other languages. Persons speaking these languages will be employed to provide assistance to foreign speaking respondents. In addition, we plan to experiment with small localized offices (often called store-front) manned by Census Bureau employees who can provide on-the-spot foreign language assistance. Our Mississippi site will not be equipped for foreign language assistance since there is no significant foreign-speaking population in this area. (We will, however, make special efforts to communicate with the Choctaw Indians in this area.)

American Indian Reservation Enumeration Techniques

The Mississippi test site includes the Choctaw American Indian reservation where we will test various ways to improve our enumeration methodology. We asked the tribal officials to appoint a tribal liaison to assist with census

activities. The liaison will work with the tribal community to increase awareness about the importance of the census and improve the participation of the Indian community in the census.

Adjustment

In 1986, we will continue to test ways to improve the accuracy of our coverage measurement techniques. Our improvments in the areas of automation and data collection techniques have made collecting and processing questionnaires simpler and faster. More time should be available for us to review the accuracy of the basic count and to make corrections if necessary. In our 1986 test, we will examine the feasibility of an accelerated census schedule into which rapid coverage measurement studies are integrated.

1986 Test Census Progress Report

I am pleased to report that early operations for the 1986 test censuses are progressing smoothly and on schedule.

At the Mississippi site, we have completed the Census Bureau listing operation to compile a mailing list.

At the Los Angeles site, we conducted a postal check of all addresses in the middle of July.

IV. RESIDENCE RULES

The Subcommittee has asked that I also discuss the residence rules to be used in 1990. As you know, before we take a census, we must determine who to count and where to count them. Census residence rules have been developed to answer these questions. They have been based on a single premise since 1790 -- usual

residence. While specific rules have been added or altered over time, the place where a person lives and sleeps most of the time generally has been construed as usual residence.

Mr. Chairman, I am submitting for the record a summary of the residence rules that the Census Bureau followed in 1980. We will consider some changes and make the final Census Bureau recommendations known to you by this fall. By January of 1987, in order to proceed with other detailed preparations, we must decide the final residence rules to be followed.

We are considering modifications in three areas: enumeration of Americans overseas, naval personnel on ships, and boarding school students.

In 1970, Americans overseas were enumerated partly through the use of an Overseas Census Report (a questionnaire) and partly by administrative records. In 1980, we used the administrative counts only for the military and Federal civilian employees and their dependents. We are currently considering whether to enumerate the overseas population by questionnaire in 1990. The alternative is to use only administrative records. The overseas population will not be considered in Congressional reapportionment or state redistricting. Although there are no legally mandated uses of data on the overseas population, there have been expressions of interest. We will carefully balance the costs and resources necessary to conduct an accurate enumeration of Americans overseas against the needs for this data.

We plan to extend a procedure used in 1980 which allocated naval personnel aboard ships to a land residence within 50 miles of homeport. In 1980 this procedure was applied only in ports which had 1,000 or more shipboard

personnel. In 1990 we are considering including all ports, which would affect approximately 18,000 people in about 130 ports.

In the past, boarding school students have been counted at their parental home while college students have been counted where they were living while attending school. One change being considered is to treat boarding schools in the same way as colleges. Fewer than 100,000 boarding school students would be affected by this change. Arguments for not changing the rule center on the dependence of children of boarding school age on their parents. A change in the rule would allow for more consistent residence rules.

Closing

Mr. Chairman, let me summarize what I have discussed here today. I have described the steps we are taking to automate the 1990 census. I discussed our findings from the 1985 test censuses and the ALCT. I shared with you some of our test objectives for the 1986 test censuses. And I concluded with comments on 1990 residence rules.

Mr. Chairman, that concludes my remarks. I would like to add that I and the rest of the Census Bureau look forward to continuing work with you and the other committee members on all our activities.

ATTACHMENT

1985 CENSUS OF TAMPA AND JERSEY CITY, STATUS REPORT AND RESULTS

AS OF JULY 12, 1985

I. Collection Office Activities

- The final mail response rate was 55.6 percent for Tampa and 38.3 percent for Jersey City. (When we have a final count of occupied housing units we will compute the mail return rate which will be somewhat higher.) The differential rates by short form and long form are shown below in Section V "Preliminary Evaluations and Results."

- Our recruitment goal for nonresponse follow-up was four times the number of actual positions. In Tampa our recruitment goal was 2,000 qualified applicants; we tested 1,922 and 1,729 qualified. In Jersey City our recruitment goal was 3,800 qualified applicants; we tested 3,858 and 3,087 qualified. Despite the large pool of qualified applicants, we had difficulty filling all positions; people are refusing jobs when contacted because of other commitments or they feel the length of employment is too brief.

- In Tampa, the nonresponse operation was completed on June 4, at which time 54,971 nonresponse follow-up cases had been checked-in. The operation was extended over 3 weeks beyond the original schedule.

  The remaining experienced nonresponse enumerators moved into the edit follow-up enumeration that required a work force of approximately 200 enumerators. Training for the edit follow-up began on May 15; the operation started on May 22 and was completed June 22. The total work load for this operation was 27,241 cases: 2,034 residual nonresponse (blank forms mailed-in); 14,672 units identified by enumerators as vacants or deleted; 3,921 content edit failures; and 5,465 coverage edit failures.

- In Jersey City, nonresponse follow-up of 56,724 cases was completed on July 5. This operation was extended over 7 weeks beyond the original schedule.

  The edit follow-up operation in Jersey City began with training on June 12. The operation started on June 19. The total work load was 16,360 cases: 671 residual nonresponse (blank forms mailed-in); 11,891 units identified by enumerators as vacants or deleted; 2,146 content edit failures; and 1,824 coverage edit failures. As of July 12, 78.4 percent of the work had been completed, completion is expected by July 20.

- Special place operations were completed close to schedule in Tampa and Jersey City. The one exception is Jersey City casual count enumeration; it was completed on May 24, 2 weeks behind schedule.

II. Processing Office Activities

- Data capture of enumerator returns continues. All mail returns have been checked-in, data captured, edited, and reviewed.

The telephone follow-up operation of failed edit cases from the processing office in Jeffersonville was completed for Tampa and Jersey City.

III. Two-Stage Census in Jersey City

* The stage-two sample questionnaires were delivered to 9,154 households on June 8, with stage-two Census Day designated as June 10. Stage-two telephone assistance was available from June 8 through June 21.

  Questionnaires were returned by mail to the processing office in Jeffersonville, Indiana, where they were checked-in, and data converted. Mail response as of June 25 was 15.5 percent. Nonresponse follow-up operations were cancelled because of the low mail response rate.

IV. Other Activities

* Postcensus local review of the population and housing counts is scheduled in each site after the completion of all edit follow-up operations. This operation began in Tampa June 28 and is tentatively scheduled for late July in Jersey City.

* The tabulation and publication of final counts will begin in the early fall. Final population and housing count totals will be released in the fall, with a formal publication of additional population and housing data expected to be available in print in early 1986.

* The Post-Enumeration Survey began in Tampa June 28. Its objectives are to provide input to test new computer matching techniques, and to test a new, expanded questionnaire. Approximately 4,500 Tampa housing units and 10,000 persons will be included in this survey.

V. Preliminary Evaluations and Results

A. Advance Post Office Check (APOC)

* Results as percent of total addresses:

	Jersey City	Tampa
Added Addresses/Apartment Designation Correction*	22.7	4.6
Undeliverable Addresses	1.6	1.0

* Most were the result of apartment corrections. The two types could not be distinguished on the Address Control File for APOC.

B. Unit-by-Unit Precanvass

- Results as percent of total addresses:

	Jersey City	Tampa
Geographic Transfers (Wrong Block)	0.9	1.2
Apartment Designation Correction	9.0	1.2
Added Addresses	5.0	7.1
Deleted Addresses	4.6	2.1

These findings closely paralled 1980 census precanvass evaluation findings.

C. Mail Response and Data Quality

- Mail response rate differentials by short form and long form --

Preliminary results for Tampa show that response rates were 57.6 percent for the short form, 48.6 percent for the key longs, and 47.4 percent for the Optical Mark Reader (OMR) long forms. The Jersey City panel A (Modified 1980 panel) short form was 38.7 percent and long form 31.4 percent. The panel B (two-stage panel) short form response rate was 39.5 percent and the long form rate as of June 24 was about 15.5 percent.

- Preliminary results of the mail reminder card in Tampa show a 3.8 percent increase in mail response attributable to the card.

- Preliminary results from the editing of the questionnaires indicate the respondents have problems completing certain questions (age and sex) on the OMR form tested in Tampa. The problem appears to be a function of the design, not OMR technology.

- Incoming nonresponse rates for population items from the 1985 test census mail returns are as follows:

Item	Jersey City, NJ	Tampa, FL
P2 (Relationship)	3.5%	3.5%
P3 (Sex)	2.0%	11.9%
P4 (Race)	6.6%	5.8%
P5 (Century of birth)	4.1%	17.2%
P5 (Decade and year of birth)	4.1%	15.7%
P5 (Month of birth)	1.7%	9.4%
P6 (Marital status)	3.0%	4.8%
P7 (Spanish origin)	13.6%	11.2%

- A small survey of nonresponding households was conducted in both sites to ascertain why these households did not return their census questionnaires. Preliminary results show:
  - There is some evidence that census forms were thrown away by respondents who did not open the envelope.
  - There is no indication that respondents were "turned off" by the Jeffersonville, Indiana return address.
- In general, respondents were exposed to publicity about the census, but not through multiple sources. Exposure to type of publicity varied somewhat by demographic characteristics.
- The Census Bureau sponsored "Focus Groups" in Tampa to assess the affect of the OMR questionnaire design. They reviewed the Tampa questionnaires, and stated the following:
  - With minimal cosmetic/content changes, all participants reacted positively to the OMR questionnaire.
  - Minorities differ on the concern about data confidentiality.
  - Publicity needs to emphasize confidentiality and improve the understanding of how census results will help people.
  - Some participants indicated they had never seen a questionnaire.
  - People do not take the (test) census seriously.

1980 DECENNIAL CENSUS RESIDENCE RULES

College students--College students were counted as residents of the area in which they were living while attending college, as they have been since 1950. Children in boarding school below the college level were counted at their parental home.

Citizens abroad--Americans who were overseas for an extended period (whether in the Armed Forces, working at a civilian job, going to school, retired, and so forth) were not enumerated in the 1980 census. Counts of Armed Forces and Federal civilian employees and dependents overseas were obtained from the Department of Defense and the Office of Personnel Management but were not used in the census. Americans who were temporarily abroad, on a vacation or business trip, for example, were counted at their usual residence in the United States.

Members of the Armed Services--Members of the Armed Forces living on a military installation were counted, as in every previous census, as residents of the area in which the installation was located. Armed Forces personnel not living on a military installation were counted as residents of the area in which they were living.

Each Navy ship was attributed to the municipality that the Department of the Navy designated as its homeport, except for those ships which were deployed to the 6th or 7th Fleet on Census Day. As was done in the 1970 census, naval personnel aboard deployed ships were defined in the 1980 census as part of the overseas population, because deployment to the 6th or 7th Fleet implies a long-term assignment.

In homeports with fewer than 1,000 naval personnel assigned to ships, the crews were counted aboard the ship. In homeports with 1,000 or more naval Personnel assigned to ships, the naval personnel who indicated that they had a usual residence within 50 miles of the homeport of their ship were attributed to that residence.

When a homeport designated by the Navy was contained in more than one municipality, ships homeported and berthed there on Census Day were assigned by the Bureau of the Census to the municipality in which the land immediately adjacent to the dock or pier was actually located. Other ships attributed by the Navy to that homeport, but which were not physically present and not deployed to the 6th or 7th Fleet on Census Day, were allocated to the municipality named on the Navy's homeport list.

Persons with two homes--The decision as to which of two residences to indicate as "usual" is generally left to the individual involved. If the person is not sure which residence to indicate as usual, the person is instructed to indicate the residence in which he or she spends the greater part of the year.

Persons with two homes were not, per se separately identified in the census. However, counts of persons staying in housing units occupied entirely by persons with a usual residence elsewhere were published in PC80-S1-6. (Persons staying in the house of a "permanent" resident were not included in the report, nor were persons staying in hotels, motels, or campgrounds.)

Members of Congress--Members of the U.S. Congress were sent a letter asking whether they wished to be enumerated as of their Washington residence or their home state address. This was simply a formal extension of our usual treatment of persons with two homes and not a unique residence rule.

Aliens, regardless of whether documented--Citizens of foreign countries having their usual residence (legally or illegally) in the United States on Census Day were included in the 1980 census enumeration. The only noncitizens excluded were those temporarily visiting or traveling in the United States or living on the premises of an embassy or consulate. There were no census questions which dealt with visas, visa type, or other documentation.

Transients--Persons in hotels, motels, etc., on the night of March 31, 1980 were requested to fill out a census form, if they indicated that no one was at their usual residence to report them in the census. This information was then sent to the district office in which that residence was located. Persons who indicated they had no usual residence other than where they were staying were enumerated as of that place.

Street people--Although we did not separately identify "street people" as such in 1980 census publications, there were procedures designed to ensure their enumeration in the census. Two operations in particular were geared towards the enumeration of low-income transient persons: the M-night operation and the casual count operation. The M-night operation held on April 8th, was the night on which enumerators visited places such as flop-houses, missions, and other places providing accommodations for $4 or less per night. Persons enumerated in the M-night operation were assumed to have no other residence and were enumerated where located on M-night.

The casual count operation was designated to enumerate low income transient persons who might have been missed in other census operations. In certain cities, persons at such places as employment offices, bus and train stations (if not covered in M-night), welfare offices, and certain street corners, were approached by teams of enumerators who asked whether the person had been counted in the census. If they indicated they had not been counted and had no usual residence, these persons were counted as of the casual count operation location.

Mr. GARCIA. There will be no objection to that. We will enter your statement, Mr. Keane, into the record.

To you, Peter, just let me say this. You have heard most of the testimony here. I just asked my counsel if you had an opportunity to read the testimony by the inspector general and by GAO prior to this hearing. My understanding is that you have, that they were available to you and you had a chance to read them.

Mr. BOUNPANE. We had the IG testimony.

Mr. GARCIA. OK.

Well, I just think that would help expedite this hearing because the purpose is to get the three agencies together so that you would be able to have a chance to respond to some of the concerns that the committee has as well as the two other agencies.

Mr. BOUNPANE. Of course.

And basically, if you would like, Congressman, I would be glad to just say just a few words about this automation problem and then try to directly answer some of the concerns that have been raised by both the GAO and the IG, if that is OK.

Mr. GARCIA. Fine.

Mr. BOUNPANE. It probably is a good place to start to talk a minute about "What does automation in the census mean?"

The concerns raised were very reasonable. This is a major area and there are big decisions to be made, and they have big impacts. And so it is right that people should look at it carefully and question it.

But let me just try and tell you a little bit about what that really means. Automation in the census has many aspects. The automated geography program is one aspect of automation that is already moving. The purchase of equipment has already been started. That is not waiting till fall 1986.

The address control file, which was done manually in 1980, and updating it into an automated system that can be accessed in real time is another aspect of automation in the census. We have already accomplished that. We think we can come to grips with what kind of equipment needs to be used in 1990 to do that well before the fall of 1986.

There are administrative things like payroll and monitoring who you hire, et cetera, which can also benefit by using micro computers in the census. And we intend to do that, and we do not have to wait till fall 1986 to do those.

Truly the big issue is how to process the census questionnaire. That is, how to convert them from paper forms into computer-readable form. That is the issue most people have concerns about. Those are the concerns I see being raised here today. And they are legitimate. Let me tell you why I think that is the case.

This is a major change in the way the census has been taken. And I would like to give just a few numbers so people can get a feel for what this really means.

In 1980, the way we processed the census was that after the collection operations were over, all the questionnaires were shipped to three processing offices, and in those three controlled environments they were then converted into computer-readable form. That task took on the order of 5 months and it worked very well.

In order to achieve what all of us would like to achieve——

Mr. GARCIA. Just let me interrupt you.

Mr. BOUNPANE. Surely.

Mr. GARCIA. Where are those three sites?

Mr. BOUNPANE. Those three sites were Jeffersonville, IN, New Orleans, and just outside Los Angeles, Laguna Niguel.

Mr. GARCIA. And each one of those had a specific region of the country.

Mr. BOUNPANE. Correct. The country was split into thirds, about equal workloads.

We are talking about, in order to have the computer do what people did by hand in 1980, moving those operations to decentralized locations and, in effect, doing some of the tasks, most of the tasks that took 5 months in 1980 in 5 to 7 weeks in 1990.

I want people to understand that, because it is a major challenge. Therefore there are lots of questions that do have to get answered, and it is, I think, fair that people have differences of opinion about how to answer them and when to answer them.

Because of that big change, we tried to find the right date that would give us enough time to learn what we would have to learn to make those decisions properly balanced against the very real problems of purchasing equipment in the Government and getting it installed and implemented.

We felt the fall of 1986 was about that right balance. We checked with our procurement people and they have told us that, yes, that would be very tight, but we think we can make the purchases. And we have already begun to work with GSA and our procurement staff in the Commerce Department to set the stage so that when we come forward with those procurement requests, they are not surprises to people.

I do not mean to belittle anyone's concern about this because we have the same ones. If we could make up our mind earlier, Congressman, we would. But with this massive change and so much riding on it, we feel it is necessary to learn as many facts as possible before making those decisions. A very, very tough choice.

I appreciate people's advice that we should get on and move, but I think if we do, we run the risk of making a large mistake and that could be disastrous come 1990.

With that as background, if you want, I will be glad to turn to some of the comments made by the GAO and the IG and try to talk about them. Would that be OK?

Mr. GARCIA Yes.

Mr. BOUNPANE. First, the GAO mentioned that we had problems with the small page that we had to use in the OMR machine in Tampa. They are absolutely correct about that. We were forced to use a small page, and it did cause some problems for the respondent. We would have liked to have had a larger page at that point in time. Unfortunately, the technology was not available. People are now bidding to supply us with OMR machines that will read a larger page.

The second concern raised by GAO, and others, by the way, I should point out, is why are we considering keying at all. It seems to be a somewhat backward technology and a relatively expensive technology. And there is a question of finding enough people to do such a task. These are, I think, reasonable concerns.

When we started out, we did not envision using keying. That was not a system we thought we wanted to use either. However, as we put together what it would take to do the census decentralized processing, using either optical mark reading or using the film procedures tape version that was used in 1980, both of those also require a number of keying stations. They require keying stations for several reasons. We need to put the name and address file together to allow for computerized matching and field control. The only way to get the names into a computerized system is to data enter them even if you used FOSDIC or optical mark reading.

Then there are a number of write-in questions. They need to be keyed because neither optical mark reading nor FOSDIC read handwritten entries. It comes out that using optical mark reading or FOSDIC requires about half the number of key stations that would be required to fully key.

Now, that is still a substantial difference between the two. But when looking at those kinds of numbers, we decided to keep examining keying, either to use as a standard or because other people have done it relatively successfully, for example, Canada.

We understand the problem in obtaining that many key stations, controlling them and finding people to work at them. Thus keying is not a high probability choice for us, but we will continue to examine it and measure other things against it as a comparison.

With regard to the two-stage census, that was, I know, a concern of this committee before 1980 and is still a concern. There were some criticisms of how we ran the program in Jersey City. Let me address a few of those.

If you are going to use a two-stage census, when you go back at the second point in time, you have two options. You can try to find the same set of people that you found in the first stage and then just ask additional questions of them. In that case, you would not have had to repeat those 100-percent questions that GAO pointed out we did repeat.

However, we felt we could not do that. We could not find the exact same set of people 2 months later very easily. To do that properly in a full-scale census means tracing them wherever they would be in the country. And we felt that that would not work. And so the only other alternative is to say that those people you enumerate at the second stage are in fact a fully independent sample.

Now, to make estimates from a fully independent sample, it is not simply a matter of saying since I sampled at 1 and 6, I will give everyone a weight of 6 and add it up. You cannot do it that simply. You will not get agreement on some items. For example, the number of males that is estimated from the sample will not be the same as the number of males counted at the 100-percent stage. Nor would the number of Hispanics or any other key variable.

To handle that kind of problem, a statistical procedure called ratio estimation is used, which means you estimate the number of males, for example, from the sample and you weight it to equal the number of males in the 100 percent. Now, that has a nice advantage of consistency. It also has another advantage of improving the quality of other statistics tabulated.

To do ratio estimation you need to ask a person if they are male or not in the second stage. You also need to ask them, are they Hispanic and so on. Therefore we had to repeat a 100-percent set of questions. We would not have had to ask all of them. We could perhaps have eliminated the housing questions.

So there I think we have some agreement with what was said. But this basic choice has to be made, do you go for the same set of people or do you go for a whole new set of people and, in that latter case, you must ask some of the 100-percent questions a second time.

I would like to stop here to make sure I explained the issue clearly. It is relatively complicated and I did not want to overdo this here or confuse anyone. But did I make that point clear?

Mr. GARCIA. Yes.

Mr. BOUNPANE. With regard to publicity in the second stage, yes, it was limited. We did a few things. We did appear at an arts festival with a census booth, which was on June 9, the day of the second stage. We handed out brochures and booklets. We had a few PSA's at the second stage. More publicity would have helped, we agree, but we have some doubt that it would have helped tremendously when you think about the fact that the return rate was 15 percent. Perhaps more publicity would have got it up to 20 or 30, but it is unlikely it would have got it to a very, high number.

There was some criticism of the special nonresponse sample survey that we did. I would like to address those statements as well.

First of all, was it hurriedly planned? Yes, it was. We did not expect those kinds of mail return rates. In order to get the survey in the field in time to learn from it properly, we did hurriedly plan it. I do not think the sample was too small, especially when you consider what it was aimed at trying to find.

We have fairly good evidence from 1980 as to why people did not mail back their census questionnaire. We did a massive national survey after the census to ask people why they did not mail back your census questionnaire? We really were designing this survey to see if anything new was showing up over what we learned before. For example, we used a return address to Jeffersonville, was that a problem for respondents? We did not think so, but it could have been. Was there some growing antigovernment feeling that we had not realized was out there?

Basically this survey was designed to find those major kinds of things. And we did not detect either of those.

One thing that was not mentioned about that survey is why so many people answered that they never received the census questionnaire. Do we really think that 38 percent of those in that sample are reflective of all Jersey City never getting the census questionnaire? No, we do not. We have no evidence that the post office did not deliver questionnaires to that extent.

I should point out to you that this same process was used after the 1980 census, and was very well controlled and very well planned. In 1980, 33 percent of the people said they had never received the census questionnaire. It must be a problem of memory or a problem that the person you are talking to was not the person who actually got the waited questionnaire or, something like that.

It seems to be a natural thing for people to say, no, I never got it, when in fact someone in the household did.

With regard to the Tampa reminder card. Is this OK, Mr. Congressman, that I am taking this much time?

Mr. GARCIA. Fine.

Mr. BOUNPANE. OK. All right.

They are correct. We only used one mailout in Tampa, and multiple mailouts might be beneficial. We were trying to take this one step at a time. And based on the success in Tampa, we are going to use multiple mailouts in our 1986 test. And that could help.

We had a little concern—we discussed this at our last hearing—about mailing out a second questionnaire. We are worried about being able to control dual copies for the same household. It should be easy to be done but we are not sure about that. And, of course, there is an added cost of mailing a second questionnaire as opposed to mailing a postcard. Still I think that cost is probably not significant relative to the gain you could get there. But having two questionnaires floating around for the same unit is something we would like to examine more carefully.

With regard to the GAO suggestion about more special purpose tests, we agree with that, and we will try to do more. We have done some of these special tests in the past. For example, we did a volume test on the optical mark reader that was actually used in the 1985 Tampa test. After the Tampa test was completed, we tried to replicate a large number of optical marked forms and run it through to see how the machine would deal with a huge volume. That was like a special purpose test. We will do some special purpose testing on developing the questionnaire, some classroom activities and things like that.

The test we just did in Chicago, for example, to look at how people react to the race and Spanish origin questions was really a small special purpose test, not a full-scale census.

For some of the things suggested, however, I do not know that they could be tested in a special purpose test or if that special purpose test would be so large as to almost be a census. I am talking about things like the two-stage. I am not sure I know how best to do that outside of the census environment.

But I think the suggestion is not a bad one at all. And we will look for more special test opportunities.

With regard to some of the comments from the IG, we are also concerned about the partisan problems that existed in the 1980 census. And therefore we do not plan to request an exception from the civil service law that would allow us to use the political referral system in 1990. So we would try to avoid the kind of problems that came up in 1980.

With regard to increased costs between 1970 and 1980, there was a substantial increase in the cost of the 1980 census relative to the 1970 census. There have been increases over time. Each census costs relatively more than the last as we have been looking at it in the most recent censuses. That is primarily because the censuses have been changing. They have been getting better, more things are being added to them. A number of things were added between 1970 and 1980. Mr. Funk said that about 51 major categories of activities were added between 1970 and 1980.

We have discussed this and we are going to go back and examine those added procedures one by one and say whether or not they were a good addition or bad addition to the census process, and see if they should be continued toward 1990.

I would like to point out, however, that not all of them were direct coverage improvement procedures. Many of them were. But there were new products put into the 1980 census, the most important being the redistricting program; 1980 was the first time we were required by law to supply special information to States for use for within-State redistricting. That was a major change and a big effort, and that cost quite a bit of money.

There are other activities like that in that list of 51.

The IG is correct about a balancing effect towards 1990. We think there need to be improvements in 1990 over 1980. All of us know some of the problems that were there in 1980. To correct them will cost money. The kind of decentralized processing I just mentioned, though it has benefits, will cost money. Those are incremental over 1980.

We feel we can balance savings in other areas to pay for these incremental costs so that we will get a better census at the same per unit cost. That is our goal, that is what we are trying to do.

With regard to the phone numbers for nonresponse. Again, a reasonable suggestion, I think. It is just that in implementation, we have a hard time doing it. We tried crisscross directories in 1980, and it was very difficult to get a phone number for an address, particularly in multiunit buildings where a phone number is not specifically identified by apartment. Our mailing list has only apartment designation on it. And we actually spent more time trying to get the phone numbers than we might have spent knocking on the doors.

Still in all, I agree that interviewing is expensive. It is the critical piece of the census taking process. So we plan to try again in 1986 with attempting to get some phone numbers for those people who do not mail back their census questionnaire and to try to get their interviews by phone rather than personal visits.

With regard to the different production standards that were mentioned, again the IG is correct. Let me try to explain this.

First of all, what is a production standard? A production standard is a number we give to the crew leader. The crew leader is the supervisor of enumerators. We try to give the crew leader an idea of what an enumerator ought to do if they are doing their job right. So they have an ide f when somebody is doing well and when somebody is not doing well.

We assigned different production standards. We told the people in Tampa that the production standard ought to be 12. And we told the people in Jersey City that the production standard ought to be nine. Why was it different?

In Jersey City, we had this two-stage test going on, and that was going on in half of the city. Therefore, an enumerator assignment in Jersey City, because we only assigned an enumerator to one or the other of those procedures, had a larger physical land area than an enumerator assigned in Tampa where there was only one type of census going on. And because of the increased travel time for those enumerators in Jersey City who might have to skip a block to

get to their next unit because that block was a different test procedure, we lowered the standard there. Perhaps those were not the exact right numbers, but that was the reasoning for having a lower standard in Jersey City than in Tampa.

Now, how did 12 get to 15? That was changed by the district office manager in Tampa at her initiative in an attempt to try and do a better job there and to try to speed the process up. She thought she was doing the right thing in trying to help out the census.

With regard to whether or not people would carry over to the next day anything they did over the production standard. In anything as big as the census, I am sure there are some people out there who will vitiate the system one way or another. We have no evidence that that was large scale. It may have occurred on a one-by-one basis or something like that, but we do not have a feel that this was a wholesale activity.

With regard to scheduling work hours by enumerators, again the IG is correct. We instructed the enumerator to be flexible about when they work. We did this to try and increase the number of people we might have available to hire. If we said we will only take people who are available between 4 and 7 o'clock, that that would restrict the universe we could hire from. So we wanted to give the enumerator flexibility about when to work. Some of them probably chose to work in the early afternoon, and while it is not the most productive time, it may have been the only time they could work. And there are some people home, people with small kids, et cetera, in those hours. And some interviews probably were conducted.

Finally, with regard to the long-range ADP plan that the IG mentioned, this is not exactly my area within the Census Bureau, but I have some thoughts about it. And I just wanted to clarify that if I understand Sherman right, that is really a question about long-range ADP planning for the entire Census Bureau of which the decennial census, of course, is a major piece. He had some concerns on how that is happening.

The person responsible for that is not here today. We do have an approach. We have a staff. Now it is not headed by an SES appointee it is headed by a grade 15, and that staff does do some of the things Sherman was saying he thought that staff should not do, like day-to-day activities as opposed to long-range planning

Finally, with regard to "do not be peak and valleyish" between censuses, but stay as even as possible, I like that idea a lot. In application, it gets very hard. The census is a big effort and requires a huge number of people at one point in time. I do not know precisely what could occur when the census is over when you just do not need that number of people any more. And we are aware of that and we are trying to find rotation patterns, et cetera, within the Bureau to try and handle that problem.

If I understood his comment properly, it was more toward the idea of we should plan as if peaks are going to happen and utilize people better, as opposed to not have peaks and valleys. At least, that is the way I heard it.

Those are the notes I wrote down, Congressman. I will be glad to try and answer questions from you or whoever.

Mr. GARCIA. Well, what I would like to do now is ask GAO to comment very specifically on your statement as it deals with Jersey City.

Mr. DODARO. In terms of the feasibility of testing it in a two-stage test?

Mr. GARCIA. Would you introduce yourself for the record, please?

Mr. KAUFMAN. I am Jack Kaufman. I am the Assignment Manager responsible for our efforts at the Census Bureau.

Our main concern on the two-stage census was really with simplifying the basic form. We felt that by using a simple form and gathering the basic population data, there would be a greater and quicker response from the respondents. And that was our main concern in our two-stage recommendation.

We were disappointed frankly when the Bureau did not simplify their first-stage effort. We also noticed that the National Academy of Science recently reported that some of the housing questions which are on the simple form may be obtained from different sources other than the respondents. We continue to believe that out original recommendation of simplifying the basic form has merit.

Mr. DODARO. I would like to add to that, Mr. Chairman. I think that the Bureau's agreement with us to delete some of the questions that were repeated from the short form onto the long form would have been beneficial in the test of the second stage. Since all the short form questions were repeated again on the long form, we feel that respondents were discouraged after all, they had just filled out the short form several weeks earlier and then received another form, not only asking additional questions but asking them to repeat answers to the same questions they had responded to earlier.

We agree with the Bureau that there are certain questions needed so they can make a linkage between the short form and the long form so they know it is the same person per household responding to it. But we think the linkage questions can be drastically reduced from the number that were conducted in the Jersey City pretest.

Mr. GARCIA. Would you like to respond to that, Peter?

Mr. BOUNPANE. Sure.

On linkage, the answer is yes, I think that can be reduced. There are only seven questions at this time. Perhaps we are talking about four or something like that. I doubt it could be reduced much less than that.

And with a further look that would probably be an appropriate thing to do.

With regard to the mailout of the first form and keeping it shorter than the 1980 short form. As for the population questions, I do not think that that could occur, Congressman. I do not know any one of those seven questions—one of which is just asking the person's name—that could reasonably be taken off of the form, and not asked of everyone. It would say, for example, that you would not get 100 percent data on Spanish origin or you would not get 100 percent data on race or we would not get 100 percent data on relationship. That kind of information is needed on a complete

count basis. And I do not know how we could get that seven down to anything less than maybe six.

I think they have a good point concering the housing questions. It probably was not necessary to ask all of those in Jersey City. We merely repeated the 1980 form. We did not do anything on forms design, and had we had a little more time, I think we could have reduced those housing questions. In fact, for 1990, that is precisely what we are planning to do.

Mr. GARCIA. All right.

In 1990 that is what you are planning to do?

Mr. BOUNPANE. That is, the 100-percent housing questions, one-stage, two-stage, whatever, will look very different from the 100-percent housing questions in 1980.

Mr. GARCIA. Just let me bounce over to you a question that the IG asked as it dealt with the question of the minority undercount in Los Angeles.

You are going into, I think, 10 or 12 counties there?

Mr. BOUNPANE. Twenty.

Mr. GARCIA. Twenty communities within the county of Los Angeles.

Mr. BOUNPANE. That is right.

Mr. GARCIA. And you and I both know if there is any place where you have a composite of different racial groups, it is in the city of Los Angeles.

How are you going to deal with that as it relates to what the IG had mentioned where we can eliminate what took place in 1980 and ensure that we get the count in 1990, or at least in 1986 when you do those 20 towns in Los Angeles County?

Mr. BOUNPANE. That is a very good point. We are concerned about that as well. It is one of the reasons we picked Los Angeles because it has those kinds of problems.

We intend to increase our promotion efforts over what was done in 1985 in the 1986 test

Second, we are going to try what we have called storefront type offices. What that really means is to have more visible locations in the community that are identified as a census place where a person could go to get help in completing their form, to ask a question. Perhaps that will help with some of the language problems which might have yielded not being in the census.

We will try the school program in Los Angeles. Just this week, we have had many people from around the country to talk about that here in Washington, including some people from the Los Angeles area. Perhaps by speaking to kids in school, they can bring these ideas home and encourage more participation. We are going to try many of the coverage improvement activities that were used in 1980 again in Los Angeles to see if we can make them be a little more effective.

Most worked quite well in 1980. The kinds that Mr. Funk talked about were the match to an independent file which did not work very well from a cost-benefit analysis in 1980. We are going to look at that again. We have now had the opportunity to try that with automated matching and hope that that will perhaps help.

Finally, we are planning to do a more timely coverage evaluation out of the Los Angeles test site. And in fact will try a dry run of

what it would take to adjust census numbers during the census process, to see if it is feasible, should we later on in the decade decide that an adjustment should be done for 1990.

Mr. GARCIA. I have further questions but I will yield to my colleague from Indiana at this point.

Mr. MYERS. Well, thank you, Mr. Chairman.

I have three issues here that I would like to discuss.

First, just the very census itself. This is the third census since I have been in Congress. I did not think I had been here this long, but they roll around pretty fast. [Laughter.]

You just get over one, and all the questions we get from our constituency, usually not about the issues that you are talking about, but why is Government prying into our lives?

I do not understand how you are researching into the questions right now or considering the questions, but talking about the cost, as I remember, one of the earlier sessions we had, the question I had about what the cost per person counted in the country, I believe the figure came back something like $15. Now, that is just direct cost, I believe, that the Census Bureau would have, not considering right today we have three element of government involved in looking over your shoulder. We have the General Accounting Office, we have your own IG from the Department of Commerce, as well as Congress looking at you. You have a difficult job but, actually, with all this help, I do not know how you can ever get around to counting the people.

First off, Mr. Dodaro, how many people do you have working on census now in the GAO?

Mr. DODARO. Within the GAO? We currently have four persons stationed at the Suitland Census Bureau.

Mr. MYERS. Full time?

Mr. DODARO. Full time.

Mr. MYERS. Have you contracted out any of these jobs?

Mr. DODARO. No, we have not contracted any out.

However, in addition to the four auditors stationed at Suitland, we also have a couple of our regional offices involved. This is necessary so that we can adequately cover the pretests in Jersey City and Tampa. But basically we have four people at Suitland full time.

Mr. MYERS. It is my understanding your involvement was triggered by a previous action by this subcommittee.

Mr. DODARO. Our involvement right now—in fact, our policy right now is to only respond to congressional requests for work in this area.

Mr. MYERS. But it is ongoing, it is continuous, you will be working with them now through the 1990 census?

Mr. DODARO. That is correct.

We received a request from this committee a year or two ago to look at the planning activities for the 1990 census. And that prompted our involvement to be on a continuing basis. The scope of that request essentially asked us to look at it up through the 1990 process.

Mr. MYERS. Well, on another committee I serve on appropriations on the legislative branch. We have discovered that the General Accounting Office is one of the more rapidly growing agencies in

our Government. It started a few years ago as a small task, small number of people, small appropriations, but it has grown rather rapidly. As we listen in on other committees, we begin to realize why it is growing like it has.

May I ask the Census Bureau, either Director Keane or Mr. Bounpane, what have you learned from what they have helped you? What did they tell, either your own IG or the GAO, what have they told you that you did not already know?

Would you like to supply that for the record maybe or think about it a little while?

Mr. BOUNPANE. I will be glad to try and answer that, Congressman.

First, could I just make sure the record shows the correct cost? The 1980 census cost $12 a housing unit, and that is estimated to be about $15 a housing unit next time around.

Mr. MYERS. Well, is it per person or per household?

Mr. BOUNPANE. The number you quoted was per housing unit.

Mr. MYERS. OK.

Mr. BOUNPANE. I think that it is beneficial to have the IG and the GAO around. I will not sit here and tell you that there are not days when I would rather they were not. But overall it is good to have independent sounding boards from time to time just to say, are you going right, to be a check.

The kinds of things, in response to your question, we might have learned from them may not be so direct as indirect. For example, it could have easily been that we had a bigger budget coming in to you. The fact that the IG has been carefully monitoring our costs sets an atmosphere for us of good cost control. And I think that in itself is relatively beneficial.

Some of the concerns that the GAO has raised relative to the two-stage census, while I do not personally agree with some of them, I think they are reasonable and at least have made us think about it some more rather than coming to a conclusion right away, that perhaps there is a point of view out there we were not taking into account.

So though they cannot be very specific about advice from time to time, I think there are areas where they have actually helped in the census process.

Mr. MYERS. Well, thank you.

I did not mean to be exact or critical. I was just questioning. We all have to have independent advice. We in Congress have over a half million of them all the time from our own constituencies which we had better be listening to.

Mr. BOUNPANE. Right.

Mr. MYERS. I am wondering if it is independent if they are living with you?

Mr. BOUNPANE. They both have permanent members stationed within the Census Bureau and whether that is independent——

Mr. MYERS. I am in a house right with you every day. How independent are they, OK.

Mr. BOUNPANE. I will let them answer that one.

Dr. KEANE. My observation, perhaps I am in a better position than hardly anyone else to make it, because I am recent and come from a totally different background.

It is easy to get caught up in your own culture as an organization, easy to have the precedence, easy to have the perspectives that an organization like ours has, especially in a repetitious past and future kind of an activity, such as the decennial census.

So both groups, as do other groups that have some representatives in this room, help us get that independent perspective. And some days, as Peter points out, they do an exceptional job.

Mr. FUNK. Mr. Myers

Mr. MYERS. You are one of the defendants here. [Laughter.]

Mr. FUNK. That was a point I would like to make.

One of the striking things about the Inspector General Act is that it creates people like myself and puts us in a position of straddling a barbed wire fence all the time. We report, in my case, to Mac Baldridge, the Secretary of Commerce. We also report directly to the Congress in a very real sense.

But one of the striking things about the IG's is that we are able to keep our Secretaries—in my case Mac Baldridge; the Deputy Secretary, Bud Brown; and Jack Keane as the Director of the Census—advised on an independent basis of observations that we can draw from the sidelines. Of course, we are always accused of shooting the wounded that way. But we can come in from the sidelines and give an unbiased picture to the agency heads and to the department head that normally you would not find in a bureaucracy. So I do think we serve a purpose that way.

Mr. MYERS. Well, I think inspector general is very important. Back when I was in military, however, it always bothered me when I had an IG inspection by somebody who did not know nothing about the command I had. They came either from one of the support services or one of the trains, or from a different branch entirely, coming down inspecting my unit, and they did not know which end of the gun to fire, or a rifle or whatever. They just knew nothing about it. I hope your IG does.

Moving on. Your 1986 decision, I hope you are right after the experience we have had with IRS where we are told now the interest the Treasury is going to have to pay those who have not had their refunds, it is going to be over $200 million just for 1 year alone.

If you do not get the people counted right, I guess there would be no interest charge, but it might even be greater than that if you have to go back and count them twice. So I hope your decision is right. I do not know how anyone knows except you, and hope that you get the right equipment. And if you buy it in 1986, by 1990 it is going to be outdated.

We all serve on other committees, and one of the biggest costs we have in Government today is keeping our computer service updated. It is a difficult problem.

I have some general questions about residency which has bothered me in the past, one of which is counting those empty houses.

Have you considered any changes in that? It bothers me in Indiana where our people, many of them are still in Florida in April because it is still snowing in Indiana, though they move back to Indiana maybe by the first of April, they get counted there, but the house they own in Florida where they spend maybe 4 months a year is counted and given a value there and they are counted twice. And then the homeless, the people who have no homes—we

hear constantly here in Washington about those homeless people—how are you going to take care of those? College students, for example, where are you going to count them? I am giving you a lot of them. Military personnel overseas, do they get counted?

Mr. BOUNPANE. I will take those one at a time, Congressman.

The people who may not be at their usual home on census day—for example, they might be in Florida when they really do live in the North somewhere—we have a procedure called usual home elsewhere, that we call UHE. On the front of the questionnaire there is a box that says do you have a usual residence elsewhere? If so, check this box and write it down.

If, for example, someone in Florida that we went to enumerate in April checks that box and they say yes, I have a usual home elsewhere. That usual home is Indiana. The following things occur. The questionnaire is sent to Indiana and those people are counted in Indiana. And that unit in Florida is tabulated as a vacant unit, usual home elsewhere.

Mr. MYERS. They are not counted twice then?

Mr. BOUNPANE. They are not.

Mr. MYERS. An empty house is not given a value of 2.4 or something like that?

Mr. BOUNPANE. No; that would be counted as a vacant home with zero people in it.

Mr. MYERS. Did that not happen in 1980 though? Will you agree that they can house vacant quantity value?

Mr. BOUNPANE. No, Congressman; I think there is another thing that you were perhaps asking about and if you would like, I would try to explain that.

It is not the case of the person who has a usual home elsewhere.

Mr. GARCIA. Will my colleague yield?

Mr. MYERS. Sure.

Mr. GARCIA. New York is affected, too.

Mr. BOUNPANE. Yes.

Mr. GARCIA. It would appear to me that that category would probably find its way more into States in the Southern portion of our country as opposed to the North.

Now, are there any special arrangements made as it relates to advertising, as it relates to getting the message across outside of that box that may be on the form to alert those people that, in fact, if they live in Indiana and they are going to be in Florida from January through June, that they should be aware of that box, or do people end up filling out the form from Florida and not respond to Indiana?

Mr. BOUNPANE. There was not such advertisement in 1980. That seems like a suggestion we should pursue. Because it is the kind of thing that perhaps someone could overlook in filling out the census questionnaire. And if the box is not filled, then the person is counted in Florida and not in their northern home.

Mr. MYERS. I talked to a lot of people after the 1980 census where they were counted because Indiana, if you recall, lost a Member of Congress by a millifraction of a percentage, and Florida, they gained, but did not gain ours. Another State was on the bubble with Indiana. They beat us out by weightless percentile of the whole instead of the actual count. Which again I had fault, but

it was not your fault. That was Congress' fault the way they wrote the law.

But a great many people who claimed Indiana, pay taxes, still vote in Indiana, were counted in Florida or, in some cases, Arizona because they happened to be there on that first day of April. But others, I have been told by the census, that even though they were counted in Indiana, they also were counted in other States because they owned a house there. And because no one ever responded to that thing they hung on the doorknob that they were given a quantity of value.

And that is what my question is. If you want to expand on it for the record, I would appreciate it.

I have several questions, and Mr. Hansen has some about costs you would like to provide for the record. But, one, do we need a census? It is a tremendous cost. We have one every 10 years. With the computers you have today, with the statistics we have, with at least the counting today of births and deaths, and ongoing, that you have all the time for the other data, the statistical data that you gather as far as buying habits, and patterns, and so forth.

Is it really necessary to make a decennial census any more? Do not people object to the questions so much, the question you ask about sex? I do not know what the question was about sex, but for some reason people in New Jersey are more willing to answer it than people in Florida by 6 to 1. And something is wrong.

Mr. GARCIA. I would just like to say to my colleague that obviously the form was different in Tampa than the form in New Jersey. And the form in New Jersey obviously was much easier to read than the form in Tampa. And the people were confused. But the fact is that that is a very important question.

Mr. MYERS. When you question though that we are not getting accurate information, even full information, are we getting the value for this cost? Is it really necessary to take one every 10 years today?

Maybe it was back when we were so-called horse-and-buggy days, but is it necessary today?

Dr Keane. I do not think we have to resolve the question on non response rate to the sex question to address the issue. But I will not say the answer but I will lead you to some considerations where you might want to come to a conclusion.

Well, first of all, it is constitutionally mandated as a basis for apportionment to have a census every 10 years.

Second, as Peter pointed out, we use it for very useful things in this country. And Congress is most appreciative of it. The special redistricting program which he mentioned was begun in the 1980 census. When you think of all the programs, not just at Federal levels—it has been estimated that anywhere up to $100 billion of allocations that rely directly or indirectly on decennial data and, therefore, it is necessary for the census to be accurate way down to geographic subunits that are quite small. We realize the amount of money that is allocated on the basis of that.

Then a host, of course, of business decisions are based on the census. It is quite useful to them, and also quite useful in a global kind of way. And we are in a global kind of economy as Congress debates almost daily, and as the press covers.

Besides that, you have a host of other institutions, labor unions, churches, schools. We have an outreach group of those connected with schools who are in a 2-day conference going on right now. And I get letters. I am often stopped after a talk by people ranging from the head of the local housing board to the head of the State genealogical society about the need for the census.

So just to mention a few of the many, many constituencies are those who come to our outreach conferences, too, and tell us about the importance of it. And the pressure to expand it or to have mid-decade census are also examples of the importance, not just to have it but to expand it and to have it more frequently.

But, in the final analysis, is it what a civilization such as ours does to remain so or to improve its life? Having a way to enumerate individuals and profile individuals and institutions so that we have a rational, logical, numerative kind of basis to decide what we should do and what we should not do and what we should put priority on.

It seems to me to be a series of worthwhile questions addressing your question.

Mr. MYERS. Many of the responses you have given here are other than just the physical count. The actual data of information that is ongoing, is it not, that you take continuously through sampling and so forth some of the statistical data that you are talking about that industry uses. And incidently the Reagan administration has been trying to pass the cost on a lot of these things from the Government to the user. Do these users of the information pay for any of it?

Dr. KEANE. On balance, no. No, on balance. They pay for special tabulations or special surveys——

Mr. MYERS. We are talking about user fees all the time. I just wonder if the people use the census to pay for that information.

Mr. BOUNPANE. Well, generally, no. The only thing you pay for is the cost of reproduction. For example, the Government Printing Office prints the census volume. When you buy a census volume, you pay money to cover the cost of that printing. You do not pay money to recover the cost of taking the census, In effect, everyone has paid for that already through their taxes.

Mr. GARCIA. Well, if I may, you have certain instances where the fees that you charge are for statistical data that the private sector needs. I mean this is the way it was when I previously served as chairman of the Census Subcommittee and we talked about it at great length in 1979. That does not exist any longer?

Mr. BOUNPANE. I am not sure I understood, Congressman.

Mr. GARCIA. Well, what I am saying is that the last time I chaired this committee in 1978 and 1979, I remember that a great deal was made of the fact that the private sector paid the Bureau of the Census for much of the materials that they needed for expansion and for statistical data that was necessary for their particular industry.

That is not the case today?

Mr. BOUNPANE. Yes; let me make sure I clarify this.

For the regular set of data products that are planned to come out of the census, anyone can obtain those and purchase them, and the

purchase cost is usually just the production cost, printing, or the cost of the tape, or something like that.

For any special tabulation that someone would like from the census, they can ask for it, we will supply it, and we supply it at cost. And they pay for all of that cost since it is special and not previously planned. And many of them did that last time.

Finally, there was one other thing that occurred in 1980, and that was that from the 1980 census, we were not able to produce the tabulations by ZIP code which had originally been planned to be done, because of budget shortfalls. A group of businesses got together and supplied the money so that we could produce a special tabulation by ZIP code. In effect they purchased that and paid the cost of producing it.

Mr. MYERS. Well, thank you, Mr, Chairman.

Thank you for your testimony. I have some other questions as well as Mr. Hansen has some. We will provide those for the record.

Mr. GARCIA. I do not want to weigh your patience thin. We will finish up in about 5 minutes.

There are several questions that my colleague from Utah and my colleague from Indiana will submit to you for response.

We would appreciate it very much, Mr. Keane, if you would be kind enough to get that information back to us as soon as possible.

There are several questions that we are going to submit as well. And we would appreciate again if you would be kind enough to get that back to us.

Mr. GARCIA. How much time—I am talking about hours or minutes—is required per interview?

Mr. BOUNPANE. The last time we found that to complete the 100-percent form, it took somewhere from about 10 to 15 minutes, depending on the size of the family.

Mr. GARCIA. That is to fill out the form itself?

Mr. BOUNPANE. Yes.

Mr. GARCIA. Sitting down with a member of the family?

Mr. BOUNPANE. Yes, correct.

Mr. GARCIA. What about getting from point A to point B where the family is, and then leaving point B to go to the next site, how much is that? What is the cost for you there?

Mr. BOUNPANE. Congressman, I do not think I know the answer in terms of time.

Mr. GARCIA. In the city of New York, to go from an apartment on the first floor to an apartment on the second floor will take 30 seconds. But in Indiana they go from Bloomington, IN, to some other part of Indiana within the same geographic area.

How much time would that take? It would seem to me—that is right, and the point I am trying to make is to try and get an average of what it costs us as taxpayers per interview based upon all the statistics and data that you have. Because when you talked about 9 interviews in Tampa and 12 interviews in Jersey City, my thought was, well, it is the same enumerator, probably the same educational background, how do you determine that? When you are thinking that we are going to count approximately 250 million persons in 1990, what would it cost the taxpayer per person in terms of time? Can you break that down?

Mr. BOUNPANE. We will try to answer that. We may not have it directly. But I think we will have some figures that will come close to what you are looking for.

Mr. GARCIA. OK.

On June 20, 1985, the Bureau published a notice of intention to acquire a modified version of an optical mark reader from its vendor for testing in the 1986 Los Angeles pretest.

I understand that the notice is now closed.

How many proposals have you received?

Mr. BOUNPANE. I do not know the exact number, Congressman, but I think it is about seven.

Mr. GARCIA. OK.

Then, according to the GAO, if several companies submit proposals, the Bureau will need time to evaluate the proposals which would slow down the plan data processing experiments for the 1986 Los Angeles pretest.

What timeframe do you estimate for assessing the qualifications of companies and installing the equipment, and what effect would this have?

Mr. BOUNPANE. If, in reviewing these bids, we find that we are not going to be able to obtain a machine in time for the Los Angeles test, which may be the case if there are a number of qualified bidders, we would not use the optical mark reader in the Los Angeles test. We would, in fact, then do some kind of special purpose test with the optical mark reader later in 1986, and we would still conduct the Los Angeles test as planned.

Mr. GARCIA. The Bureau will be in Los Angeles in 1986?

Mr. BOUNPANE. Part of Los Angeles County.

Mr. GARCIA. You are doing that primarily for the purpose of evaluating, as the IG mentioned before, how we are going to hopefully cut back on the undercount of minorities. Is that a fair sentence there?

Mr. BOUNPANE. Yes; and one other major thing, Congressman.

We are also going to try the decentralized FOSDIC system for the first time.

Mr. GARCIA. OK.

Mr. BOUNPANE. That is very important.

Mr. GARCIA. OK.

And that is all going to be done in Los Angeles?

Mr. BOUNPANE. That is correct.

Mr. GARCIA. Now, in 1986 you are also doing rural and the site is going to be in Mississippi.

Mr. BOUNPANE. Yes.

Mr. GARCIA. OK.

Now, is that the end of our pretests or do we do anything else prior to 1990?

Mr. BOUNPANE. We are planning to also do some testing in 1987.

Mr. GARCIA. And where will that be?

Mr. BOUNPANE We do not have those sites selected yet, Congressman.

Mr. GARCIA. OK. So far you have done Tampa, which is Southern and growing urban area; you have done Jersey City which is urban, and you are doing Mississippi and you are doing another urban

center in Los Angeles. So, that would say three pretty much urban areas, one rural area.

Mr. BOUNPANE. That is correct

Mr. GARCIA. Do you try and balance it out in terms of rural, suburban, and urban?

Mr. BOUNPANE. Yes; we do, and try to balance also by region of the country.

Mr. GARCIA. We did a pretest on the Lower East Side in 1978, I believe, just a year or two prior to the 1980 census.

The 1986 pretest schedule is set and that will be those two areas we have talked about. You will expect to do one or two others after that?

Mr. BOUNPANE. In 1987, yes

Mr. GARCIA. And that will be the end of the pretests?

Mr. BOUNPANE. The end of the testing. There also will be the dress rehearsal censuses in 1988.

Mr. GARCIA. OK.

My counsel has some questions that she would like to submit to you. I am going to ask her to provide you with those questions. We also have questions from the chairman of the full committee, Congressman Ford, as well as questions from Congressman Coelho of California.

I would like to get those questions to you. I would appreciate very much if you would be kind enough to respond.

Mr. BOUNPANE. OK.

Mr. GARCIA. With that, I very much appreciate your attendance and I appreciate all that you have been able to provide this committee.

[Whereupon, at 12 noon, the subcommittee adjourned, subject to the call of the Chair.]

[The following statement, preliminary draft paper, and response to written questions were received for the record:]

STATEMENT OF THE HONORABLE EDWARD I. KOCH, MAYOR, CITY OF NEW YORK

I want to thank the Chairman and members of the Subcommittee for the opportunity to address the Subcommittee on planning operations for the 1990 Census. These selected issues were the subject of the Subcommittee's hearing on July 25.

For New York City, improving the 1990 Census count, over that of the 1980 Census, is high on the agenda. Both the coverage — and the quality of the response — need to be improved. And, I believe, my views are applicable to every large city in the country whose populations are becoming too complex to count in a decennial census or even enumerate in intercensal surveys.

Automation

For the 1990 Census, we strongly support any automation of procedures which will yield improved coverage. Since automation usually involves the purchase and testing of relatively expensive equipment, we urge that prototypes of needed devices be tested early, evaluated thoroughly and ordered in sufficient quantities in the most expeditious and timely fashion. All such materials should be in place — be tested -in the district offices well before April 1, 1990.

Automated devices will be only as good as the staff assigned to oversee them. We urge that a sufficient number of well-trained technical people be hired, at appropriate salary levels, to do the job properly. Supervision must be rigorous. Quality control procedures should be well-documented and executed. A lot of plans that look good on paper fail unless there is a substantial effort to follow through.

Several proposed automation steps that sound promising have been announced. They appear to offer improvements over procedures studied in connection with counting the 1980 Census.

The first is the automated check-in of questionnaires that match mailed-back schedules with the computerized address list. As I understand it, the address record will be printed on the face of the questionnaire in a machine readable code. Instead of having clerks look up entries in a Master Address Register and enter their receipt manually, the mailed-back questionnaire will be matched directly with the computerized register and entered into a retrievable record. This should yield a daily mail-back return rate for each local district office, highlighting problem areas and enabling Bureau of the Census to hire and train field enumerators as they are needed. Field assignment areas, known in 1980 as Enumeration Districts, should be allotted in a timely fashion and specific addresses within the districts compiled for enumerator visits. A backlog of unchecked-in questionnaires should not be allowed to accumulate. In 1980, I set up an office within City Hall to solve problems connected with the census operation. We received many calls from people who wanted to know why the Bureau of the Census was sending an enumerator to pick up questionnaires that they had returned by mail. The new system should eliminate most, if not all, of the overlap caused by timing inefficiencies.

Since the Subcommittee is part of the Post Office and Civil Service Committee, it would not be inappropriate to bring up a directly related issue. In developing the Master Address Register, the Bureau of the Census lists the precise apartment number of each unit in multifamily structures.

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Residence Rules

We do not propose any changes in current residency rules. Persons should be enumerated where they live and work most of the year; however, in situations where the stay at an alternate residence is likely to be four or five months of the year, information on the geography of alternate residency should be tabulated by the characteristics of the persons involved, particularly their ages. Such tabulations would be informational only, and would not be added officially into the alternate residency jurisdiction; however, the data would be factored into program and service planning, rate adjustments and forecasting population characteristics.

In current census-taking procedures, this information is collected only for whole households reporting primary residence elsewhere. If it is possible, data on alternate residence should be tabulated for major groups including college students; children living part of the year with one parent and part with another; and retirees who live part of the year in warmer climates.

It is not clear that those who report primary residence elsewhere were actually properly allocated to that residence. Understandably, a Florida enumerator might be reluctent to report a visibly occupied unit as "vacant," if the "residents" report that they live most of the year in New York. Yet, it is important that such a household be reallocated to the precise local area — the census tract and block where its members live during most of the year. The local area is entitled to the funds that would accrue to it on the basis of a head count or other characteristic, since the local area supports that population with protective services, sanitation services and, where appropriate, educational and social services. A complete review of the logistics required for this reallocation procedure should be undertaken.

We look forward to presenting testimony at future planned hearings of the Subcommittee covering other important aspects of the 1990 Census.

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PRELIMINARY RECOMMENDATIONS

ON

ENUMERATION AND RESIDENCE RULES

FOR

THE 1990 DECENNIAL CENSUS

(APRIL 1985)

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Note: This report represents the views of a staff committee within the Census Bureau. These recommendations have not yet been reviewed by Census Bureau management. The Census Bureau plans to present recommendations on residence rules to the Congress in fall of 1985 and to finalize the residence rules by early 1987.

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Executive Summary

Two issues basic to 1990 census planning are enumeration rules--who is to be counted in the census--and residence rules--where should those persons who are counted be tabulated. This research paper documents current practices, examines alternatives when appropriate, and makes recommendations for the 1990 Decennial Census.

This report recommends no basic alteration to the rules of usual residence, but does suggest changes which should and could be made to increase consistency, operational efficiency, and the usefulness of the data. The changes recommended include the following:

- We should provide counts from the 1990 census for Americans overseas, including persons in addition to the Armed Forces, Federal civilian employees, and the dependents of these Federal employees.

- Persons who are homeless or who provide unlocatable addresses should be counted in a specially designated group quarters in the area where they are enumerated. (This recommendation is contingent on results from studies of searching procedures.)

- Naval personnel in all ports should be given the opportunity to report a home ashore, not just those in ports having 1,000 or more as was the case in 1980.

- Boarding school students should be counted at their school residence, not at their parental home.

Note: The background materials may be cited more than once. They are coded in the approximate order of first citation, the code being shown in brackets. In some cases, where the reference is large or commonly available, it is not included in the report.

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INTRODUCTION

In preparation for the 1990 census the Census Bureau is examining the rationale for our traditional enumeration and residence rules. This paper documents current practices, examines alternatives, and makes recommendations for the 1990 Decennial Census.

The issues for 1990 have in fact been an integral part of the census planning process since 1790. While specific groups of persons may have been classified differently from time to time because of changing social, economic, or military conditions, the basic concepts of enumeration and of usual residence have and should remain unchanged. Enumeration and residence rules must be developed in order to conduct a census, no matter what the census structure, be it direct enumeration, sample estimation, or administrative records.

Enumeration rules may be summarized as "should this person be counted"? Some factors which enter into the decision of whether to enumerate are constitutional--are we required by the Constitution to include certain groups; statutory--has the Congress passed any law directly or indirectly specifying the inclusion or exclusion of certain groups; operational--do we have or can we develop a mechanism to enumerate efficiently "discretionary" groups (we will, of course, develop procedures to enumerate "required" groups); cost--do the benefits of including "discretionary" groups justify the cost.

Once the issues of enumeration rules--whom do we count? -- are resolved, residence rules--where people are enumerated and where they are tabulated -- must be addressed.

There are two basic types of population counts, de facto and de jure. De facto includes all the people actually present in a given area at a given time. De jure comprises all the people who "belong" to a given area at a given time by virtue of legal residence, usual residence, or some similar criteria. In practice, modern censuses follow one of these ideal types, but with specified modifications, and it is difficult to avoid some mixture of these two approaches. This is true in the United States, also.

In accordance with census practice dating back to the first United States census in 1790, each person enumerated in the 1980 census was counted as an inhabitant of his or her "usual place of residence," which was generally construed to mean the place where the person lived and slept most of the time. This place was not necessarily the same as the person's legal residence or voting residence. In the vast majority of cases, however, the use of these different bases of classification produced substantially the same statistics, although there might have been appreciable differences for a few areas. The implementation of this concept resulted in the establishment of residence rules for certain categories of persons whose usual place of residence was not immediately apparent. Furthermore, this practice meant that persons were not always counted as residents of the place where they happened to be staying on census day. Persons without a usual place of residence, however, were counted where they happened to be staying.

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The development of the residence rules for each census have been evolutionary--small changes of interpretation, adding or deleting groups for which special rules are required--while maintaining a constant thread with the basic rules laid down in the first census Act of March 1, 1790:

> Be it enacted, that every person whose usual place of abode shall be in any family on the aforesaid first Monday in August next, shall be returned as of such family; and the name of every person, who shall be an inhabitant of any district, but without a settled place of residence, shall be inserted ... in that division where he or she shall be on the said first Monday in August next, and every person occasionally absent at the time of the enumeration, as belonging to that place in which he usually resides in the United States.

Congress has not legislated this level of detail for recent censuses, but has delegated that authority to the Secretary of Commerce, and has permitted the Secretary to delegate further to the Bureau of the Census. This general authority over the census and the specific residence rules have been reviewed and upheld by the courts, most recently in Borough of Bethel Park vs. Stans, in 1971. The Census Bureau has also presented plans for decennial census residence rules to the Congress in hearings.

In keeping with long standing tradition, planning for the 1990 census is taking the approach that no basic changes are required in the residence rules, and only a little fine tuning is needed. We have researched and documented the known information on residence rules including the 1980 procedures, legal cases, and Congressional action.

While the following references may also be cited in specific sections of this report, they have general relevance to the issues of Enumeration and Residence Rules and should be considered basic references on these subjects.

"Census - Place of Residence", Hearing before the Subcommittee on Census and Population of the Committee in Post Office and Civil Service, House of Representatives, September 15, 1976, serial No. 94-89. [1]

The Borough of Bethel Park, etc., et al. vs. Maurice Stans, etc., et al., 449F 2d 575 (1971). [2]

Federation for American Immigration Reform (FAIR) vs. Philip Klutznick, Civil Action No. 79-3269, United States District Court for the District of Columbia. [3]

Opinion of the Attorney General of the United States, Sevententh Decennial Census, August 26, 1949, 41 Op. A. C. 31 (1949). [4]

The History and Growth of the United States Census, prepared for the Senate Committee on the Census, 1900. [5]

Shryoch, Henry S., Jr. "The Concept of 'Usual Residence' in the Census Population", American Statistical Association, Palo Atto, California, August 25, 1960. [6]

1990 Census Committee on Special Enumeration Procedures--Final Report, July 1984. [7]

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I. Enumeration Rules

A. THE OVERSEAS POPULATION

1980 Procedure and Background

No attempt was made to enumerate directly the "overseas" population in 1980. Administrative counts for Armed Forces and Federal civilian employees and their dependents overseas were obtained from the Department of Defense and the Office of Personnel Management and published only in the report PC80-1-A1, Number of Inhabitants, United States Summary. No count was obtained of the number of United States citizens who were not affiliated with the Federal government. There is no good source of such information. The State Department does give us a figure each year to use in our population estimates program, but it is not considered reliable.

Persons "temporarily abroad" at the time of the census were counted at their usual residence in the United States, although no length of stay abroad was specified. The decision not to enumerate persons overseas for an extended period was not made until 1979. (In 1976 Congressional testimony we indicated we had no plans to include any part of the overseas population in the apportionment population, even though we had included certain groups in the 1970 apportionment population. In earlier censuses we had attempted to count at least some components of the overseas population without including them in the apportionment population.)

Major factors in the decision not to attempt to enumerate the overseas population in 1980 included money, the relative size of the overseas population vis a vis 1970, the lack of any mandate to collect such data, the inability to obtain such data in a reasonably complete manner, and the lack of congressional guidance as to which groups to include (e.g., should we only include those eligible to vote, those who intend to return to the United States, war babies in Vietnam?).

Relevant Background Material

Memorandum dated August 15, 1983 from Mark Littman to George Hurn entitled "Residence Rule Issues for the 1990 Census". [8]

Memorandum dated January 23, 1979 from Mark Littman to Paula Schneider entitled "1980 Enumeration of the Overseas Population: Status Report and Suggested Plan". [9]

Undated 2 page paper (no author cited) from the 1970 census era entitled "Problems in Assigning Members of the Overseas Population to Their Home Address in the United States". [10]

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Robert Hagen's testimony of September 15, 1976 before the Subcommittee on Census and Population, United States House of Representatives, on "Census--Place of Residence". [1]

Advisory Commission on Intergovernmental Relations, State Taxation of Military Income and Store Sales, July 1976, esp. pp. 27-30 regarding tendency of military to report a state with low or no income tax for home of record. [11]

Daniel Levine's memorandums of June 18, 1979 and July 19, 1979 to Courtenay Slater (Chief Economist-Commerce) regarding enumeration of Americans overseas in the 1980 census and Dr. Slater's replies to Levine of July 1 and July 31, 1979. [12]

Vincent Barabba's letters of August 21, 1979 to Senator John Glenn (Subcommittee on Energy, Nuclear Proliferation and Federal Services) and Honorable Robert Garcia (Subcommittee on Census and Population) regarding Census Bureau's plans for Americans living overseas at the time of the 1980 census (no reply was ever received). [13]

Memorandum from John F. Long to Charles Johnson dated February 23, 1979 entitled "Americans Overseas" regarding utility of such data. [14]

Memorandum from Roger Herriot to Meyer Zitter dated November 9, 1981 entitled "Data on Americans Overseas" includes discussion of alternative sources and techniques of data collection. [15]

Legal Cases or Opinions

Attorney General J. Howard McGrath, in an opinion dated August 26, 1949, stated "The Congress has vested in the Director of the Census, subject to the approval to the Secretary of Commerce, discretion to determine the manner in which inhabitants of the United States who are aboard... shall be enumerated..." [4]

The request to the Attorney General for an opinion, Charles Sawyer, April 12, 1949, includes considerable background material on the issue of the overseas population. [16]

Assistant Attorney General William H. Rehnquist in a October 15, 1969 response to Commerce Department, Assistant Counsel Alfred Heisner's request for an opinion regarding our 1970 census overseas plans, stated that "the constitutional provisions and statutes relating to the taking of the census and referred to in the Attorney General's opinion of 1949 have not changed since that time. Finally, the decisions of the Supreme Court relating to apportionment of Congressional districts within States and equality of representation in State and local governmental units have no bearing on the legality

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of the proposed allocation procedure. We conclude, therefore, that the Director of the Census may, in his discretion, validly adopt that procedure. We express no opinion, of course, as to the policy considerations which may be involved." [17]

Borough of Bethel Park vs. Stans. [2]

Congressional Actions or Hearings

A hearing on residence rules was held on September 15, 1976 before the House Subcommittee on Census and Population. A brief discussion was held on reverting to pre-1970 treatment of Americans overseas (i.e., not to allocate to homestate for apportionment purposes).

A few post-censal Congressional letters were received, but there was no outcry (see, for example, letter from Barabba dated December 15, 1980 to Honorable Bob Wilson regarding letter from Lt. Richard Tanner). [18]

Other Relevant 1990 Census Plans

See discussion of enumeration of deployed naval personnel or military stationed abroad.

Census Bureau Use of Data

Accurate estimation of the size of the United States population requires data on the level of the net movement of Americans between the United States and overseas. Certain segments of the overseas population can be gauged using Office of Personnel Management, Department of Defense or Social Security Administration data. But, no source is complete in gauging the size of the nonfederally affiliated overseas population (see discussion in the Herriot to Zitter memo of November 9, 1981 memorandum cited above).

Program Requirements Outside Census Bureau

There are no known program requirements. However, the Department of State, Internal Revenue Service and other agencies would find such information useful in supplementing or replacing the partial information they now collect. Private concerns are also interested in such information, particularly in occupation data for Americans working abroad (based on telephone requests for information).

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B. DEPLOYED NAVAL PERSONNEL

1980 Procedure and Background

Naval personnel aboard ships deployed to the 6th or 7th Fleet on census day were not included in the population for apportionment or other purposes since we considered them a component of the overseas population. This was the procedure in 1970 (i.e., to consider deployed naval personnel a component of the overseas population) and it was not questioned prior to the 1980 census. Because, however, of the Iranian crisis; Norfolk, VA, North Charleston, SC, and a few other ports had abnormally large proportions of "their" fleets deployed on census day and these communities complained about the prospect of not being credited with these naval personnel. There were 51,177 deployed navy personnel in April 1980 according to Navy figures. A typical figure is closer to 35,000. The basis on which we included such persons as "overseas" was the belief that the length of deployment generally exceeds 6 months. Although this is not universally correct (some ships are deployed less than 3 months, for example), recent correspondence from the Department of Navy indicates that the average length of deployment over the past 5 years is still approximately 6 months.

Relevant Background Material

August 15, 1983 memorandum from Mark Littman to George Hurn entitled "Residence Rule Issues for the 1990 Census." [8]

February 9, 1984 letter from Captain A. E. Weseleskey, Department of Navy, to Mark Littman. [18a]

Subcommittee on Military and Maritime (Ann Liddle, Chairperson) report to 1990 Census Committee on Special Enumeration Procedures dated May 10, 1984, incorporated as "chapter 6" of full committee report. [7]

Letter to Honorable A. William Whitehurst, United States House of Representatives from Census Director Barabba dated December 12, 1980, discussing treatment of Navy and determination of deployment in the 1980 census regarding Norfolk. [19]

Letter to Honorable Lionel Van Deerlin dated September 26, 1980 from Census Director Barabba regarding the 1980 census enumeration of Navy personnel in the San Diego area. [20]

Letter to Strom Thurmond dated October 14, 1980, from Census Director Barabba regarding the 1980 census enumeration of Navy personnel in the North Charleston area. [21]

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Memorandum dated February 3, 1978 from Meyer Zitter to David Kaplan entitled "Recommended 1980 Enumeration Procedures for the Military, including results from the 1977 census of Oakland." [22]

Legal Cases or Opinions

See Attorney General McGrath's August 26, 1949 opinion previously cited, which basically leaves to the Director's discretion the manner of enumerating the overseas population, including military overseas. There is no known mention specifically of deployed naval personnel in any legal cases or opinions. [8]

Congressional Actions or Hearings

The issue of whether it is appropriate to include as part of the overseas population naval personnel aboard ships assigned to the 6th or 7th Fleet was not raised prior to the 1980 census.

Other Relevant 1990 Census Plans

See discussion of the overseas population and the military.

Census Bureau Use of Data

There is no known use of these data (separately). See uses of data on Americans living abroad. Independent figures are available from the Department of the Navy for the United States as a whole. Those data are used in the population estimates program.

Program Requirements Outside Census Bureau

Those states with such personnel use these data in developing population estimates, particularly those used in the federal-state cooperative estimates program.

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C. PERSONS WHO PROVIDE A NONEXISTENT OR OTHERWISE UNIDENTIFIABLE USUAL HOME ADDRESS

1980 Procedure and Background

Some persons supply usual home elsewhere (UHE) addresses that upon searching are determined not to exist, or for one reason or another cannot be determined to exist (e.g., a good street name and number was provided, but the address is an apartment building and no apartment designation was provided). All the various operations which entailed searching included some such persons (e.g., whole household usual home elsewhere persons, T-night persons with no one home to report for them, as well as a miscellaneous ICR related searches). The 1980 census procedures did not provide an alternative site to which to attribute such persons, and thus we do not know whether they were included in our 1980 counts. More than one out of four persons who indicated a usual residence other than where they were found failed to provide an adequate address (there were at least 250,000 such persons who failed to provide an adequate address--see 1980 census PERM number 6). The presumption has been that such people were enumerated by proxy (e.g., a neighbor) at their usual home, and that to add them to an area without being able to match and check the questionnaire for the usual home address would result in duplication.

Relevant Background Material

1980 census Preliminary Evaluation Results Memorandum (PERM) No. 6 dated March 9, 1981, "Some Results of Address Searching Operations in the 1980 Census" prepared by Mark Littman. [23]

August 15, 1983 memorandum from Mark Littman to George Hurn entitled "Residence Rule Issues for the 1990 Census. [8]

"Alternative Ways of Handling the Enumeration of Persons Who Give 'Nonexistent' UHE address in 1980" dated 1/25/80 prepared by Mark Littman. [24]

1980 census manual D-513M, "Coverage Improvement Searches Manual." [25]

PC80-S1-6 "Nonpermanent Residents by States and Selected Counties and Incorporated Places: 1980." [26]

Legal Cases or Opinions

None known.

Congressional Actions or Hearings

None known.

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Other Relevant 1990 Census Plans

See any discussion of persons away from their usual residence, multiple residence, or searching procedures.

Census Bureau Use of Data

No known use is put to these data (separately). We did, however, publish a report on nonpermanent residents (PC80-S1-6), and the existence of such persons (giving "bad" addresses) obviously affects the quality of those data.

Program Requirements Outside Census Bureau

There is no known use of the data separately. However, there is interest in these data as a component of all nonpermanent residents (although there is no known legislative uses for these data); see, for example, the following:

Memorandum from Jeanne M. Woodward to Janet Tippett, Housing Division, dated April 10, 1984 entitled "Minutes of Local Public Meetings (1980 census), reviewed with reference to nonpermanent populations seasonal or secondary housing." [27]

Letter to David Kaplan from Ruth Ann Killion, Department of Administration, State of Florida dated December 17, 1975 regarding counts of nonpermanent residents. [28]

Letter dated October 25, 1983 from Professor Curtis Roseman of Illinois to Richard Irwin regarding collection of data on multiple residence, searching procedures. [29]

Letter dated April 18, 1984 from Professor Richard Morrill of Washington state expressing interest in collection of data on multiple residence. [30]

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D. UNDOCUMENTED (ILLEGAL) ALIENS

1980 Procedure and Background

A lawsuit filed in December 1979 by the Federation for Immigration Reform (FAIR) and five members of Congress raised the issue of inclusion of illegal aliens in apportionment counts. The question was not answered fully in court because the suit was dismissed on a technicality.

The FAIR organization recognized that at the time the Constitution was written the nation welcomed all immigrants, and the concept of illegal migration had no meaning, but FAIR supported the contention that, in our era, including illegal aliens in the apportionment count violates the "one-man, one vote" mandate by diluting the vote of citizens in areas with few illegal immigrants.

The Census Bureau's position (other than it was too late to change the questionnaire--the suit was filled in December 1979-and we did not know how to estimate adequately the number of illegal aliens) was that the Consititution specified persons as the basis for apportionment, without regard to citizenship or legal resident status.

Relevant Background Material

Washington Post, Saturday, December 22, 1979, page A6 "New Year's Census Threatened by Suit Over Illegal Aliens" by Margot Hornblower. [32]

New York Times, Friday, December 21, 1979, page A1, "Dispute Over Aliens Snarls Census Plans," by Robert Reinhold. [33]

Various affidavits, defendants motions, etc. pertaining to Civil Action No. 79-3269 in the United States District Court for the District of Columbia, Federation for American Immigration Reform, et al., plaintiffs vs. Philip Klutznick, et al., Defendants. --some of these documents are available in Jeff Passel's office and/or the Program and Policy Development Office. [3].

Memorandum from Charles Johnson, Jr., to Meyer Zitter dated January 24, 1980 attaching a "rebuttal to various points raised in the FAIR suit." [34]

Memorandum from Meyer Zitter to Daniel Levine dated June 16, 1980, subject "1980 Census Enumeration of Immigration and Naturalization Service Detention Centers." [35]

Memorandum from Meyer Zitter to Richard Burt dated June 24, 1980, subject "Enumeration Status for Immigration and Naturalization Service (INS) Detention Centers." [36]

Final report of the 1990 Census on Committee Special Enumeration Procedures. [7]

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Legal Cases or Opinions

See FAIR suit cited above; also, for summary of cases implying the correctness of the Census Bureau's position, see "Memorandum of points and authorities in support of defendants' motion to dismiss the action or, in the alternative, for summary judgement and in opposition to plaintiffs' application for a preliminary injunction." [3]

Congressional Actions or Hearings

Debates on the issue of aliens, both illegal and legal, have been held many times in the Congress; see Passel and Woodrow "The Judicial Basis for Enumeration of Undocumented Aliens in the 1980 Census and Implications for the 1990" presented at the annual meeting of the American Statistical Association, 1984, for a summary. [37]

Other Relevant 1990 Census Plans

See Jeffrey Passel's research plan on Enumeration of Illegal Aliens, transmitted in a memorandum dated November 18, 1983 to Paula Schneider. [37]

Census Bureau Use of Data

Such data are a necessary component in population estimation and projections.

Program Requirements Outside Census Bureau

Although data are not available from decennial census, agencies such as the Immigration and Naturalization Service and the Office of Refugee Resettlement have an intrinsic interest in obtaining figures on illegal aliens.

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E. FOREIGN DIPLOMATS

1980 Procedure and Background

Citizens of foreign countries temporarily visiting or travelling in the United States were not enumerated in the 1980 census. Diplomats and other persons living on the grounds of the embassy of a foreign country were not enumerated in the 1980 census; however, an attempt was made to enumerate all other citizens of foreign countries resident in the United States, whether or not they were associated with the embassy or consulate of a country. Some such persons could and did occasionally claim diplomatic immunity. There are an estimated 20,000 foreign diplomatic personnel living in housing units in Washington, D.C. area.

This is essentially the same procedure used in the 1970 and several prior censuses. No mention of this group was found in 1930 or earlier reports.

Relevant Background Material

See report of the subcommittee on Members of Congress and Diplomats to the 1990 Census Committee on Special Enumeration Procedures, which is contained in chapter 7 of the full committee's report. [7]

Legal Cases or Opinions

None known.

Congressional Actions or Hearings

None known.

Other Relevant 1990 Census Plans

See discussion of illegal aliens.

Census Bureau Use of Data

None known.

Program Requirements Outside Census Bureau

None known.

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F. MARITIME PERSONNEL

1980 Procedure and Background

Other than military ships, the only shipboard personnel we attempted to enumerate were those on United State flag merchant vessels (i.e., United States flag ocean going, coastal and Great Lakes merchant vessels on lists obtained from the Maritime Administration, United States Department of Commerce.). No attempt was made to enumerate persons aboard various other types of ships (e.g., those on inland waterways, fishing vessels, oil rigs). We assumed persons on these ships had a usual residence ashore where they would be counted. Marinas were canvassed for persons whose usual residence was aboard a noncommercial ship, and such persons were enumerated on their boats.

Shipboard Census Reports were mailed to crews of merchants vessels through the ships' respective owner-operators but, very few persons were counted in this manner. If the ship was berthed in a United States port on census day, the crew was enumerated as of that port. If the ship was not berthed in a United States port but was inside the territorial waters of the United States, the crew was enumerated as of (a) the port of destination if that port was inside the United States or (b) the homeport of the ship if its port of destination was outside the United States. Crews of United States flag vessels which were outside United States territorial waters on census day and crews of vessels flying a foreign flag were not enumerated in the 1980 census.

This method was developed because the Coast Guard indicated that the "homeport" designed by merchant vessels is at times selected for tax purposes (Wilmington, Delaware being the favorite) and that the ships may never enter their "homeport". In 1970, merchant ships were apparently "homeported" regardless of their location on census day.

The United States merchant fleet continues to decline in size. In 1980, only 8,200 persons were enumerated on civilian ships. In 1970 the figure was 11,100 (an additional 15,900 were enumerated as part of the overseas population in 1970).

Relevant Background Material

Form D-3091, "1980 Census Location Report for American Flag Vessels." [38]

Memorandum for Henry Smith, Chief (PID), from Mark Littman, dated November 2, 1979, "1980 Enumeration of Persons Aboard Merchant and Fishing Vessels." [39]

Memorandum for Earle Gerson from Meyer Zitter dated April 12, 1979, "Recommended 1980 Enumeration Procedures and Residence Rules for Persons Aboard Merchant and Fishing Ships." [40]

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Memorandum for Charles E. Johnson, Jr., from Mark Littman dated September 10, 1976, "Enumeration of Maritime Personnel: 1970 Procedures and the 1980 Census." [41]

Final report (when issued) of the 1990 Census Special Enumeration Committee-chapter 6- Report of Subcommittee on Military and Maritime.

Legal Cases or Opinions

None known.

Congressional Actions or Hearings

None known.

Other Relevant 1990 Census Plans

See "overseas population", "undocumented aliens", and "foreign diplomats." If it were decided to enumerate the overseas population in some fashion, one component of this group would be persons aboard American flag vessels which are outside United States territorial waters at the time of the census.

Census Bureau Use of Data

No known use of these data.

Program Requirement Outside the Census Bureau

No known uses of our data since they relate to such a small component of maritime personnel.

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RECOMMENDATIONS FOR THE 1990 CENSUS ENUMERATION RULES

Enumeration of the Overseas Population

It is Population Division's recommendation that in the 1990 census we make an attempt to enumerate the overseas population (including land based military personnel) in a manner similar to that described in Mark Littman's memorandum to Paula Schneider of January 23, 1979. This effort would be similar to the 1970 census effort with the exception that no attempt would be made to allocate the population abroad to home state for apportionment purposes, although it is recommended that such data be collected for research purposes. In addition we would reimburse embassies and consulates for publicity, we would temporarily staff the embassies in Canada, Mexico, and a few other countries which are known to have large numbers of Americans (to handle mailing and addressing). We would also prepare a somewhat more organized publicity campaign among American firms and organizations operating abroad than was prepared in 1970. The estimated cost for the proposed procedure was $260,000 for the 1980 census (see "Estimated Cost Related to Taking a Census of Americans Overseas" prepared by Ann Liddle, March 19, 1979). [42]

Though it is true that a complete count of persons living abroad with some claim to United States citizenship (operationally we would restrict "Americans abroad" to those with some claim to citizenship or prior residence in the United States and with intent to return to the United States) is impossible to obtain, it still seems to us that an effort should be made to do so, or minimally, that provision be made to allow such persons to be counted in some fashion, if they so choose. If we enumerate residents of the United States regardless of citizenship or eligibility to vote, should we not at least attempt to enumerate or allow to be counted those persons who fulfill one or both those requirements, and who intend to return to the United States, but are living or working abroad (for less than a lifetime commitment) at the time of the 1990 census.

Enumeration of Naval Personnel Aboard Ships Deployed to the 6th or 7th Fleets

It is Population Division's recommendation that in the 1990 census we enumerate naval personnel aboard ships deployed to the 6th or 7th Fleet, and include such personnel as part of the overseas population. No attempt would be made to allocate such persons back to home state for apportionment purposes, although we do recommend that such data be collected for research purposes.

Since average length of deployment according to the Navy Department's February 9, 1984 letter was over 5 months for the 6th Fleet and more than 6 months for the 7th Fleet, regardless of ship type, it seems a fair judgement that persons aboard such ships on census day have been or will be away from their stateside residence for an extended period circumambulating the census date and should be attributed to the ship (i.e., "overseas"). To determine whether a particular ship, or each crew member, has been or will be deployed to the 6th or 7th Fleet for more than 6 months seems to add more complexity to this operation than is warranted, and possibly more than the Navy would feel appropriate to reveal to us for perceived security reasons.

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Enumeration of Persons Who Provide a Nonexistent or Otherwise Unidentifiable Usual Home Address

It is Population Division's recommendation that in the 1990 census we consciously enumerate such persons either at the address where they were staying on census day, or by some means enumerate them in the community where they claimed to maintain their usual residence (e.g., create a "ficiticous" group quarters for such persons, assigning them to the block containing the address closest to that provided, or randomly to a block in the place where they claim to live-if no place can be identified, then randomly to a block in the county or state).

This recommendation requires further study on its potential for double-counting. Which of these two places (i.e., the district office of origin or district office where they claim to live) proves more procedurally feasible for their enumeration cannot be determined yet. The only group for whom such a procedure was evolved in the 1980 census was shipboard naval personnel in large ports. If shipboard personnel supplied a "bad" usual home address they were to be counted back on the ship (to what extent this was actually accomplished is unknown).

Enumeration of Undocumented Aliens

The Census Bureau's practice has been to enumerate as completely as possible all usual residents of the country without regard to legal status of their residency. We have based this practice on the constitution and the Census Bureau's enabling legislation.

Unless the Census Bureau is required by new legislation or court order to exclude illegal aliens from our population counts, it is Population Division's recommendation that such persons be included in the 1990 census enumeration.

Enumeration of Foreign Diplomats

The Census Bureau's practice has been to enumerate as completely as possible all usual residents (which we have translated to mean all persons with a residence) of the country without regard to citizenship. The rationale for excluding persons living on embassy or consulate grounds has been that such properties are considered to represent foreign soil.

In order to exclude foreign diplomatic personnel living outside the embassy, additional questions would need to be added to the form since we have no way of separately identifying diplomatic personnel at present. We do not feel that this is worth the questionnaire space. It is Population Division's recommendation that in the 1990 census we use the same procedure for foreign diplomats as in 1980. We may have to accept the refusal of some diplomatic personnel to be enumerated as a legitimate right. However, some proof of a connection with a foreign government should be required.

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Enumeration of Maritime Personnel

It is Population Division's recommendation that we adopt the procedures for Maritime personnel recommended by the Military and Maritime Subcommittee of the 1990 Census Special Enumeration Procedures Committee, that is:

(1) Keep the 1980 procedures concerning where to attribute the crews, as outlined in the background section.

(2) Restrict the mailing of forms to merchant ships on mailing lists obtained from the Maritime Administration (MARAD), which would include ocean-going, coastal and Great Lakes ships (and floating canneries and freezer ships) but exclude inland waterways--see discussion in the Subcommittee report.

(3) Assume persons aboard fishing vessels have a usual residence ashore--according to Office of Fisheries, most trips are under 2 weeks in length--see discussion in Subcommittee report.

(4) Assume persons aboard NOAA ships have a usual residence ashore since most of their trips are of short duration, the personnel are not transient, and the ships have "real" homeports, based on conversations with NOAA--see subcommittee report.

(5) No attempt should be made to enumerate persons aboard ships flying a foreign flag. There is a perception, at least, that such ships have a certain amount of sovereignty, akin to an embassy or consulate. Additionally, foreign nationals aboard such ships are comparable to persons travelling in the United States on short business trips, whom we have traditionally excluded from the enumeration.

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II. Residence Rules

A. DOMESTIC MILITARY

1980 Procedures and Background

The enumeration of the Armed Forces in the United States as residents of the area in which they are stationed has been the practice in every census since 1790. How that area is defined has changed slightly, but there is no evidence that Armed Forces personnel were ever assigned back to a preservice residence. The details of the usual residence rules for the domestic military may be looked at in three groups--rules for those land based, those assigned to ships, and those in transit between duty stations or on temporary duty.

Land based military--In 1980, the usual residence of land based military was determined by each person's response to question 2b on the Military Census Report (form D-21) for those assigned to bases with residential quarters. The answer to question 2b "what is the address where you usually stay at least 4 nights a week?" could have been a barracks on-base, or a housing unit on- or off-base, but presumably always in the area where they were stationed. The MCRs and the household census forms were matched to ensure coverage. Military assigned to nonresidential installations received regular census forms at their housing units.

In 1970, questionnaires were distributed by the military to barracks and individual housing units on base, and by the post office or regular enumerators to off-base housing units. No special questions were asked in 1970 or earlier about where the person usually stayed. This may have produced some differences relative to 1980, on the reported usual residence of military personnel at the small geographic level, but the intent was the same as in 1980.

Military assigned to ships -In 1980, crews of Navy and Coast Guard ships were "homeported" to the officially designated United States homeport, with certain exceptions. If the homeport had an afloat strength of 1,000 or more, crew members were allowed to claim a usual residence within 50 miles of the homeport (the mile restriction was imposed to limit the search operation). If the ship was homeported to a port split by a political jurisdiction, the crew enumerated on board was counted in the appropriate jurisdiction. In 1970, crews of "undeployed" ships were homeported without the 1980 exceptions. In 1960, crews were counted as residents of the place where the ship was actually located on census day.

Military in transit between duty stations or on temporary duty--In 1980, persons absent from their unit on temporary assignment and expected to return to their permanent duty station, persons on leave, and persons away without leave or for other reasons were enumerated at

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the base to which they were assigned. An MCR was obtained from all persons transferring into an installation during April, except that personnel in transit through Fort Dix, New Jersey, identified as being overseas on April 1 were not included in the counts for that area.

Relevant Background Material

1990 Census Committee on Special Enumeration Procedures, Final Report, Chapter 6. [7]

Memorandum from Gerald J. Post to Richard C. Burt, "Enumeration of the Military", April 2, 1980. [43]

Memorandum from Mark S. Littman for the Record, "Persons Enumerated in the Transfer Point at Fort Dix, New Jersey," August 7, 1980. [44]

Memorandum from Mark Littman for 1990 Planning Subcommittee on Military and Maritime Topics, "Distribution of Shipboard Population by Size of Homeport," January 25, 1984. [45]

Legal Cases or Opinions

Borough of Bethel Park vs. Stans. [2]

Congressional Actions or Hearings

None known.

Other Relevant 1990 Census Plans

Special Enumeration Procedures--military installations must be identified in order that the correct procedures are applied.

Census Bureau Use of Data

No specific operational or analytic need.

Program Requirements Outside the Census Bureau

None known.

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B. COLLEGE STUDENTS

1980 Procedures and Background

College students have been counted in the locality in which they attend college since the 1950 census. The college residence could be the parental home, separate quarters, dormitory, fraternity or sorority house, boarding house, etc. Prior to the 1950 census, college students were to be counted at their parental home, not at the college residence. Studies prior to the 1950 census showed that significant numbers of college students were not counted at either residence, and that in more than half the cases the college residence was the usual residence.

Relevant Background Material

Usual Residence of College Students, author unknown, May 6, 1966. [46]

Usual Residence of Students, memorandum to Members of the Technical Advisory Committee on Population for the Seventeenth Decennial Census, author unknown, October 14, 1948. [47]

Enumeration of College Students in 1950. Philip M. Hauser, Acting Director, Bureau of the Census to The Secretary of Commerce, March 2, 1950. [48]

Legal Cases or Opinions

Borough of Bethel Park vs. Stans. [2]

Opinion of the Attorney General (41 Op.A.G.59, March 25, 1950). [4]

Congressional Actions or Hearings

None known.

Other Relevant 1990 Census Plans

Special Enumeration Procedures--if the 1980 procedures are retained, colleges will have to be identified so that special place procedures can be applied to ensure enumeration.

Census Bureau Use of Data

No specific operational or analytic need.

Program Requirements Outside the Census Bureau

No specific program requirements are known.

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C. BOARDING SCHOOL STUDENTS

1980 Procedures and Background

In 1980, as in each previous census, boarding school students below the college level were counted as residents of their parental homes on the assumptions that they are not yet living independently and would return regularly to those homes.

Relevant Background Material

No specific references are known other than in field procedure manuals and summary definitions in published reports.

Legal Cases or Opinions

Bethel Park vs. Stans. [2]

Congressional Actions or Hearings

None known.

Other Relevant 1990 Research Plans

Special Enumerations Procedures--if the traditional procedures are retained, boarding schools will need to be identified so that the students are not enumerated.

Census Bureau Use of Data

None known.

Programs Requirements Outside the Census Bureau

None known.

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D. PERSONS IN INSTITUTIONS

1980 Procedures and Background

Census Bureau procedures have differentiated between long term and short term facilities. Persons confined to long term facilities, such as penitentiaries or correctional institutions, mental institutions, homes for the needy or aged, and hospitals for the chronically ill are enumerated as residents of the area in which the institution is located. In many cases residents of long term institutions stay for indefinite length of time and often have no other homes.

Persons in short term facilities, such as general hospital wards and detention centers have been counted at their residence, if they have one; otherwise they are counted as residents of the area in which the facility is located.

Relevant Background Material

No specific references are known other than in field procedures manuals and the summary definitions in published reports.

Legal Cases on Opinions

Bethel Park vs. Stans. [2]

Congressional Actions or Hearings

None known.

Census Bureau Use of Data

Institutional data for small areas is an integral component of the population estimates program.

Program Requirements Outside the Census Bureau

None known.

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E. MIGRANT WORKERS

1980 Procedures and Background

In 1980, residents of migrant labor camps were enumerated using Individual Census Reports (ICRs) which requested the address of a usual place of residence if the respondent had one. The information for those that did identify a usual residence elsewhere was transferred to that place using the standard procedures for ICRs. Those that had no other usual place of residence were counted in the area where they were enumerated. In 1980, 65,364 person were enumerated as living in workers dormitories (which included migratory worker's camps, logging camps, and other labor camps).

In 1970, residents of migrant workers camps were counted as residents of the locality in which the camp was located. The justification for this procedure being that the camps have shifting populations composed mainly of persons with no fixed residence. Research subsequent to 1970 indicated that many migrant workers did in fact have a place they considered to be their "usual residence".

Relevant Background Material

Meyer Zitter to Curtis T. Hill, "Residence Rules for Counting Migrant Farmworkers--1980 Census", October 28, 1977. [49]

Irene C. Montie for The Record, "Observation on Investigation of: Migrant Labor Camps (among other subjects), March 25, 1977. [50]

Charles E. Johnson to Meyer Zitter, "The Enumeration of Migrant Farmworkers in the 1980 Census", October 20, 1977. [51]

Meyer Zitter to David L. Kaplan, Hill, and Jones, "Usual Place of Residence of Migrant Farmworkers", August 4, 1976. [52]

Charles E. Johnson to Meyer Zitter, "Counting Migrant Farmworkers in the 1980 Census", June 7, 1977. [53]

Irene C. Montie, Statistical Methods Division, "Study of Migrant Labor Camps", October 7, 1977. [54]

Mary Puente-Duany, "Migrant Workers Report" prepared for the Census Advisory Committee On the Spanish Origin Population for the 1980 Census", February 19, 1976. [55]

No author, 1980 Decennial Census, Migrant Labor Camps, Special Places Report, November 17, 1978. [56]

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Mark S. Littman to Charles E. Johnson, "Results of the 1977 Survey of Migrant Farmworkers", October 6, 1977. [57]

Letter from Daniel B. Levine to David A. Swanson, August 1981, discusses specific measures to taken to ensure the enumeration of on-site petroleum workers in Alaska. [58]

FSCP Newsletter, Vol. III, No. 2, "Local Count Oil-Related Worksites, North Slope Borough, Alaska." [59]

Legal Cases or Opinions

None known.

Congressional Actions or Hearings

Senate Report No. 91-83, "The Migratory Farm Labor Problems in the United States", February 19, 1969. [60]

There are, no doubt, numerous other references of Congressional hearings on migrant workers, particularly agricultural workers. None are known to relate directly to the Census Bureau residence rules.

Other Relevant 1990 Census Plans

If the 1980 procedures are repeated, Special Enumeration Procedures will have to identify migrant workers camps so that ICRs rather than regular census questionnaires can be used.

Census Bureau Use of the Data

No seperate identification is made of data for migratory workers, other than group quarters type.

Program Requirements Outside the Census Bureau

No specific rules for data relating to the usual or temporary residence of migrant workers is known.

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F. MEMBERS OF CONGRESS

1980 Procedures and Background

In 1980, Members of Congress were given the option of being enumerated at their Washington, D.C. area residence or in the district in their home state. This procedure has apparently existed since at least 1960. Members are given this option because, while the census residence rules would designate their Washington area home as their usual residence, the law requires that they be residents of the state from which they are elected.

Relevant Background Material

Richard C. Burt to District Managers, "Home State Residence Enumeration of Members of Congress", March 4, 1980. [61]

Robert W. Burgess to Daniel J. Flood, House of Representatives letter dated May 23, 1960, "You ask whether one Congressman may be the constituent of another. In view of the fact that we did make provisions for counting Congressmen in Their Home Districts, the question does not arise so far as the census is concerned." "Similar arrangment were not made for Congressional staffs." [62]

1990 Census Commitee on Special Enumeration Procedures, Final Report, Chapter 7. [7]

Legal Cases or Opinions

None known.

Congressional Actions or Hearings

None known.

Other Relevant 1990 Census Plans

The 1990 Census Committee on Special Enumeration Procedures in their final report recommended that the "Usual Home Elsewhere" procedures would take care of this question. Changes in questionnaire content and procedures should be monitored for this issue.

Census Bureau Use of Data

None known.

Program Requirements Outside the Census Bureau

None known.

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G. PERSONS WITH NO PERMANENT RESIDENCE

1980 Procedure and Background

There are three groups of people with no permanent residence, those found in housing units (with relatives, friends, etc.), those in transient quarters (hotels, motels, missions, etc.), and the homeless (the "street people"). In all cases, these groups are enumerated where they are found. In the case of those in housing units and transient quarters, the place is relatively easy to identify. For the homeless in 1980, a pseudo-group quarters was established for each block in which such people were found, and the people were assigned there. Similar practices have been in effect since 1790.

Relevant Background Material

1990 Census Committee on Special Enumeration Procedures, Final Report, Chapter 4. [7]

D-531M Coverage Improvement Searches Manual-1980. [63]

Election Administration Reports, Volume 14, November 21, October 29, 1984, "Federal Court Rules New York Must Register Homeless Persons." [64]

Legal Cases or Opinions

None known.

Congressional Actions or Hearings

None known.

Other Relevant 1990 Census Plans

1990 Special Enumeration Procedures.

Census Bureau Use of Data

None known.

Program Requirements Outside the Census Bureau

The Interagency Working Group on Institutional Population has requested "accurate counts of homeless."

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M. PERSONS WITH MULTIPLE RESIDENCE

1980 Procedure and Background

In 1980 and 1970, if it was determined (presumably through a response to question H1) that a person had more than one home and divided time between them, they were instructed to be enumerated at the place where they spent the largest part of the calendar year. Or, if they occupied another residence near their place of employment, they were to be enumerated at the place where they spent the greater part of the week (the reference week has never been clearly specified). Other persons with possible multiple residences are covered in other sections of this report.

In 1970, there was a sample housing question which asked if a second home was owned or being bought. No further information (such as number of days occupied, address) was requested. For 1990, a direct question on multiple residence to be asked of each person is being contemplated. The proposed questions would also directly ask the person to identify which they consider to be their usual residence.

Relevant Background Material

Charles F. Johnson, Jr., to Meyer Zitter, "Usual Place of Residence of Persons Temporarily Away from Home while Working", July 30, 1976. [65]

Roger Herriot to Marshall Turner, Jr., "Usual/Multiple Residence and Coverage Questions for 1990, January 25, 1985. [66]

Paula Schneider to Bruce Johnson "Testing Objective for Usual/Multiple residence," March 6, 1985. [67]

Robert F. O'Brien, PERM Memorandum No. 89, "Whole Household Usual Home Elsewhere (WHUHE) Evaluation." [68]

Legal Cases or Opinions

None known.

Congressional Actions or Hearings

None known.

Other Relevant 1990 Census Plans

Census Bureau Use of Data

None known.

Program Requirements Outside the Census Bureau

None known.

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Summary and Recommendation on Residence Rules

Residence rules have been based on a single premise since 1790--usual residence. While specific rules have been added or altered over time, the place where a person lives and sleeps most of the time has been generally construed as the usual residence. No conceptual or operational reason has been discovered which would require a change from this basis. Recommendations for the 1990 residence rules for each group are discussed separately below. No recommendations are made on specific procedures or operations.

An issue which must be addressed and clarified is the time reference used in rules for specific population groups. While the references probably must be variable because of the circumstances of various groups, they must not be contradictory.

Domestic Military

Land based military--In 1990 this group should be given the opportunity to identify their usual residence on- or off-base as was done in 1980. This can be accomplished whether unit or barracks control is used, if the form asks the appropriate questions. The time reference should continue to be "at least four nights a week." Search should be conducted for all UHEs; those for whom the address is not found in search should be counted as living on base (the details of how this is to be done is an operational problem which should be determined elswhere). This recommendation agrees with that of the 1990 Census Committee on Special Enumeration Procedures.

Military assigned to ships--In 1990, all personnel should be treated the same. Ships not assigned to the 6th or 7th Fleet should be homeported, and within the port, assigned to the correct political geography. Crew members should be given the opportunity to report a usual residence ashore within fifty miles (the rule seems to be appropriate in that most crew must be able to report to their ships within a short period of time). The rule will also limit the search area. Crew members not reporting an ashore residence or reporting an address not found in the search operation should be counted as being on the ship in the appropriate geography.

Removing the requirement of port strength of 1,000 would resolve an inconsistency based soley on operational considerations. This will make our rules more defensible. This procedure would cover 19 additional "large ports" and 121 "smaller ports" identified in the 1980 census. In 1980 only 15 percent "afloat" naval personnel were located in these small ports. This recommendation agrees with that of the 1990 Census Committee on Special Enumeration Procedures.

Military in transit between duty stations or on temporary duty--These groups should be treated similarly to civilians in the similar circumstances, if there are indeed plans to treat them.

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Those in transit between duty stations on April 1 are the same as movers. They could be considered to have no usual residence and thus should be counted wherever they are found--e.g., in a BOQ, a motel, or Mom and Dad's house, even though they may have quarters waiting for them. This includes situations such as Fort Dix, New Jersey, except that an additional check should be made to determine if the people were in the United States as of census day.

OR

If the "movers" are in transit, and have quarters waiting for them, and expect to take up residence during April, they should be counted at that residence. [If this is desirable, the ICR could be rewritten to include a "moving" box which would include an expected date to begin residence, along with the address.]

The 1990 Census Committee on Special Enumeration Procedures took no position on this issue.

College Students

There should be no change to the rule to count college students where they live while attending college. We should, however, consider making available special tabulations of college students separate from the other population in order to respond to numerous such requests.

Boarding School Students

There should be a change in the residence rules so that these students would also be counted where they live while attending school. This is the single exception to the "usual residence" concept (other than shipboard naval personnel in small ports and members of Congress). There are arguments about the relative independence of children of these ages, and about plans to return to the parental home, but these may be overridden by coverage and operational considerations. There seems to be no accurate count of students in boarding schools, but estimates do not exceed 100,000 nationally. If the rule were changed, there would be considerable impact on a number of small places in the direction of increasing their population (assuming the rules were correctly applied in 1980 and earlier censuses).

Persons in Institutions

The traditional rule of where to count persons in institutions should continue to be based on "long" or "short" term facilities. The issues discussed by the 1990 Census Committee on Special Enumeration Procedures on defining institutions revolved around "care and custody" not on length of stay. Any decision on the definition of an institution would have ramifications for residence rules in that the residents of a place considered to be a long term institution would not be given the opportunity to identify a usual residence, while they would be if the place were classified as a noninstitutional group quarters. The generic list of types of institutions should be examined for its effect on residence rules.

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Migrant Workers

Residents of migrant worker camps should continue to be given the opportunity to identify a usual home elsewhere. If the address is nonexistent or otherwise unidentifiable, they should be counted at the camp. (This would, of course, require in many cases that the questionnaire be transferred twice; this may not be possible or desirable depending on operation considerations.) If they have no home elsewhere, they should be counted at the camp.

Members of Congress

Members of Congress (and their families, if in the Washington area) should again be offered the option of being enumerated at the Washington area address or in their home state. This group would continue to violate the usual residence rules, but with some justification.

Persons with No Permanent Residence

Persons with no permanent residence should be counted where they are found at the time they are enumerated (M-night, T-night and casual count operations are not necessarily conducted on census day, but steps should be taken to ensure the enumeration takes place in a short a time-span as possible.). The homeless should be assigned to a "fictitious" GQ in the block in which they are found. These procedures would be required most often in urban areas, especially city centers, but may be widespread, including rural areas.

Persons with Multiple Residence

If the question concerning which of 2 addresses the respondent considers their usual residence is included on the 1990 questionnaire, the response to that question should be used to determine usual residence. (This presumes that testing will evaluate the accuracy of the responses, and thus the worth of the question.) If the question is not included, those persons with multiple residence should be counted at the place where they spend most of the year--no change from the present procedure.

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THE CENSUS BUREAU'S RESPONSE TO WRITTEN QUESTIONS

QUESTIONS REGARDING LIST COMPILATION

QUESTION 1: The Bureau of the Census was expected to have the results of the Address List Compilation Test by June 1985 in the case of urban areas. Have results been obtained? If so, what are they?

ANSWER: The results of the urban portion of the Address List Compilation Test have been obtained and analyzed. See Attachment 1 for a copy of that report.

QUESTION 2: What is the status of the report the Secretary of Commerce is required to submit to the President and appropriate Congressional committees not later than September 30, 1985?

ANSWER: P.L. 98-166 required only one report to the President and appropriate Congressional committees. We submitted that report as required on August 28, 1984. In that report, we noted that the planned dates for completing the final documentation of the results of the urban portion of the test was summer 1985 and autumn 1985 for the rural portion.

We have completed an analysis of the results of the urban part of the Address List Compilation Test, and it was issued on July 11, 1985. (See Attachment 1 for a copy of that report.) Analysis of the results of the rural part of the test, which was conducted in Hardin County, Texas and Gordon/Murray Counties in Georgia, is proceeding on schedule and should be ready for distribution in the fall of 1985.

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ADDITIONAL QUESTIONS

QUESTION 1: In making plans for the 1990 census, generally speaking, are there optimal times of the year when it is best to conduct an accurate count?

ANSWER: The optimal time for taking the census depends upon many things: weather, availability of a work force, college schedules, vacation schedules, proximity to other major dates, and so forth. April 1 was chosen for the 1930 census as the date that best balanced all these factors, replacing January 1 that was used in 1920. We are examining the April 1 date, and we are preparing a list of pros and cons for a set of other possible dates. We would be glad to discuss these pros and cons with the Subcommittee.

QUESTION 2: I have been working with my colleague, Tony Coelho of California, on a special census which the Bureau is going to do in Merced County. The county hopes to be designated as an MSA, based on the City of Merced now exceeding a population of 50,000. When would the census have to be started, so that the Census Bureau and OMB deadlines could be met for FY 1987 designation?

ANSWER: To meet the Census Bureau and OMB deadlines for FY 1987 Metropolitan Statistical Area designations, the Census Bureau expects to begin the census field operations around the first week in January, provided that the County has prepared maps and located space and people to conduct the activities. This should allow time to complete the field work and tabulations necessary to meet the May 31 deadline.

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QUESTION 3: Finally, it is the county's understanding that the Census Bureau's Los Angeles regional office will eventually be placed in charge of this project. When will the Los Angeles office be notified to start working with Merced County on this special census?

ANSWER: Approximately 60 days before the scheduled start of the special census, the Los Angeles Regional Office will begin contacting Merced County officials to work out the details of the enumeration procedures.

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SUBCOMMITTEE QUESTIONS

I. PRETESTS

A. The pre-test plan that you have presented is a very ambitious one. We certainly wish you every success with it. But we have heard that there are some statisticians who believe that "there are a number of projects that can be researched with much less expense and effort via other methods, such as thorough review of the Census Bureau's own previous tests and research." In this regard,

1. Has the Census Bureau completed its analysis of the experimental and evaluation work that it did during the 1980 census?

Most of the Bureau's 1980 census evaluation work is complete.

The current status of each evaluation is shown on Attachment 2.

2. When will you complete the analysis of the 1985 test censuses?

We have already learned a great deal from the operations themselves and have completed many preliminary evaluations which will be issued over the next few months. Those that will not be completed until next year have to do with coverage evaluation. The current status is shown on Attachment 3.

B. With regard to the costs of the pretests,

1. Did the Census Bureau remain within its budget and complete all of the planned activities for the test censuses in Tampa and Jersey City?

We expect to complete the Tampa and Jersey City test censuses within the allocated budget. All activities were completed as planned except that follow-up of nonresponding households for the second mail out in the Jersey City two-stage census test was cancelled.

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2. On a per capita basis, what did the Tampa and Jersey City census cost? What was the total cost of the Jersey City and Tampa tests censuses -- by this, I mean not only the direct temporary costs but also:

   a. the planning activities
   b. the processing activities
   c. the evaluation activities
   d. the equipment costs
   e. space costs and
   f. the cost of permanent personnel assigned to work on the test

We are only able to give costs for the Jersey City and Tampa test censuses combined. The combined per capita cost (based on the allocated budget) is $14.80. The combined per housing unit cost (based on the allocated budget) is $34.78. The total allocations for the tests are $7.3 million. As of July 23, 1985, costs were $6.2 million (see Attachment 4). Some detailed costs* are as follows (in millions of dollars):

a. Planning	$2.44
b. Data Processing/Capture	.73
c. Evaluation	.87
d. Equipment (These equipment costs are also included in data processing and other areas; they are for micro-computers and associated software.)	.03
e. Field Collection Office Space	.16
f. Permanent Personnel (i.e., salaries, leave, and benefits)(These salary costs are also included in the planning, data processing/capture, and evaluation costs.)	2.70

* Since equipment and permanent personnel costs are included in more than one category, the aggregated total of the listed items is greater than the $6.2 million total.

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3. How does this compare with the the tests held in Oakland, Travis County, and Camden before the 1980 census?

Following is a comparison of the per capita and per housing unit costs for the 1985 test censuses (Jersey City and Tampa combined) and the 1980 tests (in 1985 dollars).

	Oakland	Camden	Travis County	Jersey City/ Tampa
Per Capita	$20.03	$24.33	$11.11	$14.80*
Per Housing Unit	$44.03	$63.21	$27.74	$34.78*

*Based on allocated budget

C. We understand that some of your colleagues in the statistical community believe that "to ensure cost-effective field testing" the Bureau should prioritize its goals for each field test and identify aspects of your tests which "should be omitted" deferred to a later test or included in a test as part of the 1990 census." Could you tell us:

1. What steps have you taken to insure that the tests directly relate to alternatives that are actually being seriously considered for the 1990 census?

We have a process for selecting the test goals which has several steps. The Census Managers (a group of experts in census taking from each Census Bureau division involved in the decennial process) consider those objectives as set forth by the individual divisions. Outside recommendations are included, as well as reviews of the 1980 census. From that consideration, a list of possible objectives is formulated by eliminating those that are not feasible, unsuitable, too expensive, and so forth. The second step is a review by the

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Assistant Director for Demographic Censuses to make sure that the objectives are in line with overall census goals and to eliminate further any conflicting or impractical objectives. The third step is review by the Census Bureau executive staff. The result is a list of objectives that reflects the best judgment of census experts about what should be tested in each test census.

2. Have you recently reviewed your plans to be sure that they are realistic and that you will be able to use the results of each aspect of the test in decisions you have to make?

Yes. There is a constant review of test objectives by Census Managers, Division Chiefs and the Assistant Director for Demographic Censuses as test plans evolve. For example, in our 1986 test censuses, we originally intended to test keying all questionnaire data in the Los Angeles site, a pre-enumeration coverage measurement survey, a multiplicity coverage improvement question, and a within-multiunit Census Bureau delivery system. These objectives have now been dropped.

D. We understand that you did a survey in Tampa and Jersey City to find out why people did not respond to the census. Now, this was a very rough and ready kind of a survey (surely not up to the usual standard of Census Bureau work) but nevertheless, it found that a large percent of the people say that they did not get the census form.

1. Do you plan a more rigorous test to try to find out if this conclusion was correct?

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No. We did a carefully controlled survey following the 1980 census in which 33-percent of those surveyed said they did not get a census form, which was clearly impossible. (This percentage was 38-percent in Jersey City and Tampa.) It is apparent that a high percentage of survey respondents, for a number of reasons, can be expected to remember incorrectly whether or not their households received a questionnaire.

2. If the purpose of the pretests is to find out about problems, why didn't you plan a better survey to find out about what makes people respond to census forms?

Based on evaluation studies of the 1980 census, we know a great deal about why people do not send back questionnaires. Because of the early indications of low mail response rates in Jersey City and Tampa, we instituted this special quick study to learn if there were any additional factors about which we were not aware. Although we did have some problems in implementing this survey, we did learn a number of useful things. For example, there was no growing resistance to government as a reason for not responding, there was no aversion to the Jeffersonville return address on the questionnaires, residents were exposed to census publicity, and there was some indication that many forms were thrown away without being opened. The survey, thus, did reassure us that in Jersey City or Tampa there were no major additional unknown reasons for nonresponse.

3. Do you have any idea as to why people may not have received the census form?

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We do not believe that the "large percent" you referred to actually did not get the questionnaire. We have no evidence to show that the U.S. Postal Service failed to deliver such a large quantity of questionnaires. Past experience tells us that many people do not recall having received the form when questioned about it later, many persons questioned later are not the person who originally received the mail delivery, and persons receiving the form may not recognize it as important and throw it away.

E. What do you think explains the poor showing that the Census Bureau had in Jersey City?

We learned a great deal from the Jersey City test and, therefore, we consider our 1985 test census in Jersey City to be successful. The operations that went well show us that we are on the right track and where to refine our efforts in later tests. The operations that had problems show us options that are not viable or need much more work.

We were able to develop an automated address control file. This file allowed us to do automated check-in using bar code technology. Also, while we did not formally test key data entry equipment, we learned that it functions smoothly and efficiently in a census environment.

We also learned that we are able to begin processing earlier in a location that was separate from the district office. (The processing office was in Jeffersonville, Indiana.) The effect of

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this is to remove the paper from the district office as soon as possible. Almost everyone agrees that is a major advantage over the 1980 procedure.

Turning to census methodology, we learned that a two-stage census is probably not viable. We tested a two-stage census in Jersey City to see if first collecting just the basic 100-percent data in a hard-to-enumerate urban area could expedite the overall census process. As expected, the return rate as a percent of total mailout for the 100-percent information forms was higher than the return rate for the sample questionnaire; namely, 38.7 percent as compared to 31.4 percent (modified 1980 system). However, the return rate on the second stage mailing of the sample questionnaire was extremely low, only 15 percent. At this point, it does not appear that the two-stage method will produce an improvement over the 1980 method. The small initial gain in the short-form, or first stage, return would be more than offset by the difficulty of finishing the second stage if this kind of second stage response were typical.

We learned that we can implement a two-phase Local Review Program and that the two-phase approach is better than the one-phase approach used in 1980.

We learned that we must do much more in publicity and outreach in order to attain a high return rate. Even though our publicity efforts were limited, most residents saw or heard census publicity. Our future publicity efforts need to emphasize more strongly confidentiality, as well as the legal requirement to participate and to to improve the understanding of how census results are used.

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We learned that we have to work much harder to obtain an adequate workforce. We experienced some difficulties in hiring enumerators, and we will be working to improve this situation in future tests. We have just instituted a Census Bureau-wide task force chaired by the Chief of the Field Division to address this problem.

We also learned that we need to improve our methods to provide foreign language assistance. The procedures for distributing Spanish questionnaires were similar to those used in the 1980 census except that delivery was controlled from the processing office rather than from the collection office. While we modified the 1980 procedures to reflect this change, we found that we need to refine them further in later tests. We also will experiment with new ways to provide foreign-language assistance such as establishing store-front census offices in multi-lingual neighborhoods.

F. We understand that in Los Angeles you plan to test some alternative questions that might be used in the 1990 census.

1. Why did you decide to use a test census for this rather than rely on the National Content Test?

Every piece of information we can obtain is useful in designing the census. Although the National Content Test will be our major test of questionnaire content, if we can obtain additional information in other tests, it makes for a better census. Since the Los Angeles area has such a varied ethnic mix, it provides a good opportunity to examine other possible question wording and presentation.

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2. Do you plan to test a combined Spanish heritage ancestry question on the Los Angeles test?

   a. I understand that at a recent meeting held by the Census Bureau there were a lot of objections to this kind of a question because it does not provide enough detail about groups such as Cubans, Mexican-Americans and Puerto Ricans. In view of this, why are you continuing to test it?

We had planned to test a combined Spanish heritage/ancestry question in the Los Angeles test. We have analyzed the comments received at the recent 1990 Census Planning Conference on Race and Ethnic Items as well as information from other meetings with Federal, state, local, and private users of census data, our 1980 experience, and legislative requirements. We have decided not to test a combined question based on these consultations.

G. You seem to have some trouble finding enough people to work in your test censuses. What kinds of alternatives are you considering? For example are you considering:

1. Using part time workers?

2. Trying to get organizations such as local civic groups to help out?

3. Trying to get teachers or government workers to participate in the census?

The Chief of our Field Division has established a Steering Committee on 1990 Recruiting which held its first meeting on July 11. This group, which is composed of experienced staff members from many divisions in the Census Bureau, is charged with finding ways to improve our ability to hire and maintain the kind of field staff we need to conduct a census efficiently. Specifically, we are

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seriously considering the use of part-time workers and enlisting the help of local civic groups. Allowing part-time work would permit many teachers and other already employed persons to work for us. We also are exploring whether or not there might be other ways to employ teachers and groups like military reservists, retired persons and so forth.

II. ADDRESS LIST COMPILATION TEST

A. With regard to the discussion of the address list, could you please tell us how you arrived at your figures. What are the components of your figures. Have you included all the operations that were needed to refine the various address lists?

Detailed answers to this question can be found in the recently completed results memorandum for the urban Address List Compilation Test (ALCT) (see Attachment 1). A summary follows:

We looked at three sources of an initial list: mailing list vendors, the U.S. Postal Service (USPS), and the 1980 census address lists.

We specified our needs to the vendor and USPS and received their lists on computer files.

While the initial mail-out list of addresses was computerized for the 1980 census, changes resulting from post-mail-out activities were not used to update this file (as is planned for 1990). As a result, these changes (adds, deletes, corrections) had to be keyed and merged with the 1980 mail-out files to form a "final" 1980 file in preparation for the ALCT.

Thus, the results reported for the original or initial lists are tabulations from the purchased vendor and USPS files and from the "final" 1980 file.

In both sites, all the lists underwent a field update by Census Bureau staff that was very similar to the 1980 Census Precanvass operation.

In Bridgeport, the 1980 and vendor files also were independently reviewed by the USPS in an operation very similar to the casing checks done for the 1980 census.

The adds, deletes, and corrections from these operations were then used to update the original lists.

At this point, the various lists were matched against each other at the basic street address level and the number of units at address were compared. Discrepancies in unit counts at the same address, and basic addresses that did not match were then field-checked for validity (i.e., to make sure that non-residential addresses, addresses outside the test area, etc. were removed from all files).

Based on these checks, ALCT results tabulations were prepared. Most of the results reported are based on these final lists, which incorporate only the valid listings from the original source and the update operations.

It should be noted that all coverage comparisons are relative since we do not have a true count or a perfect list to compare with these lists.

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B. Could you please give us an explanation of how these cost figures were compiled?

These results are reported in detail in the results memorandum for the urban Address List Compilation Test (July 11, 1985). They are summarized as follows:

For the original USPS and vendor lists, the cost data used for comparisons are based on total charges billed to the Census Bureau for preparation and delivery of the computer files. (This includes costs for keying and computer programming.)

For the 1980 census list, the cost data used for comparison come from the keying of adds, deletes, and corrections from the 1980 field address registers and then merging these with the 1980 mail-out file.

Costs for the updating operations are based on USPS billing for the casing check and field operation costs for the dependent canvass.

The total costs and cost/address figures used for analysis do not include headquarters salary costs incurred at the Census Bureau relating to the design, oversight, and analysis of the test.

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III. GAO TESTIMONY

This morning we have heard some pretty devastating testimony from GAO regarding your plans for the 1990 census and the way you have managed the tests up to now. What I would like to do is to give you an opportunity to respond to their statement. In order to do this, I am going to ask you a number of questions that I have drawn out of their testimony.

A. GAO says that your test in Jersey City was not a proper test of the two stage census. They were one of the original proponents of streamlining the census by conducting it in two stages. GAO apparently does not think this is a good test of their idea. They believe this because:

   a. you did not use a "streamlined" questionnaire in the first stage.

   b. those people who were unlucky enough to be included in the second stage had to answer almost all of the first stage questions a second time.

   c. you did not adequately publicize the second stage, and

   d. you did not collect the information that would be needed to fully evaluate the second stage responses.

1. How do you justify the way in which you conducted the test in Jersey City?

The Jersey City test was designed to obtain the information we need to make a decision about whether or not a two-stage census is a viable option for 1990, and therefore we implemented it in the same way we would have expected to implement a two-stage census in 1990.

OBJECTIONS OF GAO:

a. "Streamlined" questionnaire: Basically a "short" short form was not tested in Jersey City because we did not feel that such a form would be viable in 1990. We believe that all the population questions (only 7 per person including name) are necessary to ask of everyone on a 100-percent basis. We must ask enough questions to determine that a person exists and to differentiate that person

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from another person. It is difficult to say precisely which questions are required to do that, but at the very least, they would include name, age, and sex, in addition to address. The other questions we ask on the short form -- relationship, marital status, race, and Spanish origin -- are also useful in identifying persons in the household and in helping us control the enumeration to make sure we have counted everyone.

b. Re-ask 100-percent questions: In conducting a two-stage census, there are two basic methods to obtain data at the second interview. We could attempt to contact the exact same people for the sample questions as we did for the 100-percent questions. While this would eliminate the need to repeat the 100-percent questions, we would need to ask enough information such as name, address, and so forth to be sure the right person had been contacted and we could then tie the sample information to the 100-percent information. For the second method, we could enumerate whoever is at the address when the second stage is sent out. In this method, some 100-percent information would have to be re-asked for weighting purposes. In our judgment, it would be nearly impossible to locate the exact same people (we would have to track down all the movers, people out of town, and so forth), so we decided to use the second method which requires us to re-ask some 100-percent questions.

c. No publicity at second stage: We did some publicity for the second stage although it was limited. We agree that there would have been more publicity at the time of the second stage mail-out, but that is extremely difficult to do when only a small portion (about 10-percent) of the city is involved. Also, it is very unlikely that the amount of publicity we could have afforded would have dramatically raised the 15-percent return rate.

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d. Not enough information to evaluate the second stage: We collected all the information we needed, mainly return rates. The only operation that we eliminated was the personal visit follow-up of nonrespondents in stage two. Consequently, the only information lost was the quality of response on stage two, which was not of major importance given the low return rate.

2. Why didn't you conduct a test using a short form that would meet GAO's objections?

Basically a "short" short form was not tested in Jersey City because we did not think that such a form would be viable in 1990. We believe that all the population questions (only 7 per person including name) are necessary to ask of everyone on a 100-percent basis. We must ask enough questions to determine that a person exists and to differentiate that person from another person. It is difficult to say precisely which questions are required to do that, but at the very least, they would include name, age, and sex, in addition to address. The other questions we ask on the short form -- relationship, marital status, race, and Spanish origin -- are also useful in identifying persons in the household and in helping us control the enumeration to make sure we have counted everyone.

3. Do you plan to conduct any further tests of the two-stage idea?

At the present time, we plan no further tests of the two-stage idea.

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B. GAO says that your plan to acquire automated equipment does not leave enough time for full evaluation of the alternatives that you are considering.

1. Do you think that you are going to be able to complete your evaluations on time?

Yes. We are carefully planning to expedite the analysis of automated data processing-related test activities so that at least preliminary results can be available for decision makers.

2. How will this be done in a 3-month period?

It has already started. We have begun analysis of what occurred in 1985. We will be monitoring 1986 results on a continuing basis. (We assume the 3 months referred to is the end of the 1986 test and the September 1986 decision date.) We do not wait until the test is entirely over to begin to draw conclusions. Many aspects of automation can be decided in advance of September 1986, and procurement can begin.

C. GAO says that you are considering keying information, "the most expensive, slowest, error prone, and labor intensive of the data entry options" and not considering the optical desktop mark reader "which could have multi-purpose use after the census."

1. Why are you considering keying?

There are several different reasons:

a. Decentralizing processing is an immense task. We need to be able to process over 100 million forms in a 5 to 7 week period. At the outset we were not sure that any other technology but keying could do that.

b. Keying is a standard against which we can judge the other proposed methods.

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c. Keying allows us to develop a much more "user-friendly" questionnaire. Flexibility in questionnaire design would allow us to improve the accuracy of the answers and, perhaps, we could increase the mail return rate as well.

d. Canada used keying very successfully in their last census.

e. So many key stations are needed for other census operations even with FOSDIC or OMR that the increase in key stations needed to key the entire questionnaire is within reason.

2. Where do you think you will acquire as many keying stations as are currently manufactured in the U.S. in a two year period?

We will not know the exact number of keying stations that we will need for the 1990 census until we make our automation decision in the fall of 1986. However, we are looking at using a combination of direct purchase, leasing, and contracts with private firms.

3. How will you be able to hire a large force of keyers?

In 1980, we were able to hire many more people to do office work than we expect that we will need as keyers in 1990. The difference, of course, was that people hired in 1980 did clerical work, not skilled keying. However, since 1980, the number of people with typing or keying skills has increased. Additionally, people may be willing to take positions with us as keyers since they will be gaining experience in a marketable skill. Finally, we will examine the possibility of "borrowing" keyers from other organizations.

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4. What steps will you take to insure that the process includes adequate checks for keying errors?

We can develop software to check for appropriate entries. We would do 100-percent verification at first, lowering the rate as the keyer becomes skilled.

D. GAO points out that you did not test "multiphased mail followup" procedures. As I understand it, these procedures would involve sending a number of reminders to non-respondents--including another copy of the questionnaire before spending the money to send an enumerator to try to find people.

1. Why didn't you include this in a test?

This year we tested sending one reminder card to nonrespondents in Tampa. Before testing multiple mailings, we wanted to see if it was feasible and cost-effective to send reminder cards just to those people who have not returned their questionnaires by mail. In the 1986 test we will test multiple mailings.

2. It would seem a lot cheaper to send out another piece of mail than to send out a person? Couldn't you use the money you save in this way to improve other aspects of the census?

Yes, it certainly is cheaper to have questionnaires returned by mail than personal visit. It is as yet unclear to us how much a second reminder card would save if the first one elicited no response. Any savings that might result could, of course, be used in other areas.

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E. GAO says that you could make better use of optical mark readers (the kind used on the college entrance tests) if you had a long form that was perforated so that it could be separated before it went through the reader.

1. Why didn't you try this?

The control problems in keeping track of over 100 million forms are immense and it is hard enough to do when the pages are all together. If we separated the pages, the control difficulties would be multiplied by the number of pages in the form. Taping or stapling the pages back together (necessary for certain other procedures) can be difficult to do accurately, and it would be an added expense. Our judgment is that separating pages would not be satisfactory.

F. Dr. Keane, you have just heard the GAO testify that you will have to decide "almost exactly how you will conduct the 1990 census by the beginning of 1987." According to title 13, you are required to submit the list of topics for the census to us later that year and we don't get to look at the actual questions until 1988. This will be after you are in the field with the dress rehearsal. In view of your plans, don't you think that we should agree to speed up the process and have Congressional consideration of the topics that will be on the census form before the end of 1986?

We will do everything possible to speed up the process but any final decisions about the topics will require analysis of the National Content Test results. We will probably not have all the definitive answers by the end of 1986 but certainly should have some preliminary information that we can share with you by that time.

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IV. AUTOMATION

A. If I read your testimony correctly, you are telling us that you will make the decisions about what kind of automation equipment to use in September of 1986. I have a few questions about the significance of that decision and the time when you will make it.

1. Before the automation decisions are made, what other decisions relating to the questionnaire, and the procedures for conducting the census will be required?

a. Are all the alternatives that you will consider for these decisions included in the test program of the Census Bureau.

We are assuming the need to process questionnaires that are approximately the same length as 1980, not significantly shorter or longer. We will not make major decisions about the specific content of the 1990 questionnaire before we make our automation decisions. As a matter of fact, we will make major decisions about field collection (delivery in rural areas, two-stage, structure questionnaire, special supplemental questionnaire, and so forth) at the same time as we make the automation decisions so all of that can be considered as we make decisions about the questionnaire itself. All of these issues are included in our testing plans except for the supplemental questionnaire. Should we decide that is possible, we will test it in 1987.

2. When you make these decisions, you will have only three and a half years left to census day. In fact, census operations start well before census day. GAO tells us that they found you usually take 4 years to acquire equipment. In view of this,

a. Are you going to have enough time to acquire the equipment that you need?

We have carefully examined this time schedule and agree that it is tight, but we believe that we can make it.

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b. Once you acquire it, are you going to be able to test it, install it and give it an adequate break-in period?

Yes.

c. What do you plan to do if the acquisition fails?

We would use the 1980 system of centralized processing following the completion of field collection.

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V. COSTS

A. In your testimony, you say that you intend to keep the cost of counting the people in the average housing unit in 1990 to the same cost as 1980 controlled for inflation. By this I take it that you mean that the cost will go up but only by as much as the increase in inflation and the number of housing units.

1. How do you plan to do this?

We believe that we can keep costs down by good management. We plan to make savings in certain areas (such as check-in and edit) and use the savings for improvements in other areas. We will construct our plans to be sure that the system will work well before 1990. We want to lessen the number of unforeseen problems we will have to face. We also plan to increase our publicity and outreach efforts to encourage public cooperation. Most important, we must keep the return rate high.

2. You tell us that the savings from an increase in the response rate of 1 percent will be 5 to 6 million dollars. Yet, in the 1980 census the savings for a 1 percent increase in response was 2 million dollars. How does this statement square with the claim that the per unit cost will be kept constant with the 1980 cost?

In part, inflation and housing growth accounts for the cost saving between 1980 and 1990 for a 1-percent increase in response rate. Also, the 1980 number is probably low. While we are not sure what factors were used to arrive at the 1980 number, we do know that it was a precensus estimate and was not based on actual 1980 census costs. The 1990 number is based on assumptions that we have built into our cost model including actual 1980 cost information.

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3. At this time you have not selected the procedures for conducting the census, finalized the questionnaire or selected the equipment. How do you know what the cost of the census will be or if it can reasonably be held to the per household constant dollar cost of the 1980 census?

We developed a cost model based on certain planning assumptions and cost figures from 1980 (updated). It can only give general levels of expense. When we are more definitive about plans, we will develop a more detailed budget. We think we can make adjustments in operations to maintain the same per unit cost.

B. Your statement that the cost of the 1990 census will be held to the per household cost of the 1980 census should probably be considered in a long line of Bureau estimates of costs. What I want to do is to review them with you, and then I have a question.

1. The 1960 census cost $128 million.

2. The 1970 census cost $248 million.

3. In 1977, the Bureau told this subcommittee that the 1980 census would cost $565 million.

4. In fact, the 1980 census cost $1.1 billion.

Now, in view of this record, why should we believe that the costs of the 1990 census will not escalate as the decade proceeds? More specifically, what are you doing to make sure that this does not happen?

We have a number of management controls that we did not have before, such as the cost model and the Management Information System. The latter will include more timely and accurate field expenditure information. A primary 1990 goal is cost containment and all of our managers are working within strict budget controls. Our first test censuses were within our budget estimates.

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C. One of the important parts of the cost of the census is the compensation of the field staff--the people who have to reach households that have not responded. Now we know that these people have a very large and difficult job to do and from the point of view of getting the job done, we are concerned that they are fairly compensated. But we also recognize that if it's not handled well, this could greatly increase the cost of the census. In this regard, could you tell us

1. How did you compensate the enumerators who worked in Jersey City and Tampa that is to ask did you pay them an hourly wage or by the piece?

Enumerators in Jersey City and Tampa were paid by the hour; they were not paid at a piece-rate.

2. What was the rate you paid?

Enumerators in Jersey City and Tampa were paid at a GS-3 level ($5.49 per hour).

3. Were any enumerators in Jersey City paid at a higher rate?

No nonresponse enumerator in Jersey City was paid at a higher rate; some quality control and reinterview enumerators were.

4. Another way of paying people is by the piece and we know that sometimes you offer bonuses to increase the work people do. Do you plan to run a test using the piece rate or a bonus system?

For 1986 in Mississippi and Los Angeles, we will pay enumerators on an hourly rate, and there will be an incentive based bonus system in effect. The reasons for the bonus system will be to provide motivation to the employees for staying on the job, and will create a mechanism to take into account the increasing difficulty of enumeration in the later stages of the census operation.

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VI. RESIDENCE RULES

A. As you know homelessness is a growing problem in this country.

1. What provisions are you considering putting into the residence rules that would help you to count and account for people who have no fixed address?

Our procedures already allow for the counting of persons with no fixed address. We plan to make the procedures more effective in 1990. We are strengthening "T-night" and "M-night" procedures, special procedures we have developed to count transients in hotels and motels (T-night) and in low cost quarters like "flop houses" or shelters for the homeless (M-night). In 1980 we added an additional procedure called "Casual Count," specifically to count persons on the street, in pool halls, and so forth, who were not counted elsewhere. We will expand Casual Count in 1990. We hired special types of enumerators to do this work. While these procedures should allow for the enumeration of homeless persons, they are actually of limited effectiveness because they depend upon the willingness of respondents to cooperate and the ability of the enumerators to perform a very difficult task.

2. It would be very helpful if the Bureau could plan to include a count of the homeless in its report of the 1990 census. Could you do this? What kinds of tests are you conducting to get ready for it?

In 1990, we plan to produce counts of persons enumerated by the T-night, M-night, and Casual Count procedures, some of whom report a usual home elsewhere. There is no agreed upon definition of what a count of homeless persons should actually include, but the counts from these procedures will provide an approximation. We are including tabulation tests in our test censuses.

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B. Will you seek any changes in the date as of which the census is conducted?

The optimal time for taking the census depends upon many things: weather, availability of a work force, college schedules, vacation schedules, proximity to other major dates, and so forth. April 1 was chosen for the 1930 census as the date that best balanced all these factors, replacing January 1 which was used in 1920. We are examining the April 1 date and preparing a list of pros and cons for a set of other possible dates. We would be glad to discuss these pros and cons with the Subcommittee.

C. I think it is very important to insure that college students are counted where they actually live--on college campuses. Do you plan any changes in the rules for counting college students?

No change is planned in the residence rules for college students.

D. Many people who actually live in places like New York City spend a few weeks during the winter or spring months in the south. How will you be sure to count these people where they actually live?

In 1980, we had a procedure for this situation called the Whole Household Usual Home Elsewhere (WHUHE) procedure. There was a question on the front of the questionnaire to ask if all the persons listed on the questionnaire had a usual home elsewhere. So, for example, if a family were enumerated in Florida but answered, in response to this question, that their usual home was actually in New York, we sent the questionnaire to New York to be included in the count there.

In the test censuses for 1990, we are testing a question addressed to each person rather than each household that asks if that person occupies another residence for a significant part of the year, the address of that residence, and which residence the person considers to be his or her usual home.

E. Do you think it is appropriate for apportionment purposes to leave out our service men who are stationed overseas?

Although the overseas population has generally been counted, it has generally not been included in the apportionment counts. The overseas population will be considered in Congressional reapportionment or state redistricting if Congress so directs. There are, of course, numerous problems in assigning an overseas resident to a state, and it would be nearly impossible to accurately assign the overseas population to substate residency.

ADDITIONAL QUESTION

Are you going to do further tests of the two-stage census with a simplified short form questionnaire (i.e., 6-7 questions)?

At the present time, we plan no further test of the two-stage census.

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RESULTS AND ANALYSIS OF THE

URBAN ADDRESS LIST COMPILATION TEST

ATTACHMENT NO. 1

Introduction

In 1980, over 90 percent of the population was enumerated using a mail out-mail back method of self-enumeration. As this enumeration technique becomes the norm, methods for developing and maintaining a mailing list must be both accurate and cost efficient. The 1984 Address List Compilation Test (ALCT) was designed to evaluate the relative completeness and cost effectiveness of various combinations of address list creation and updating procedures for both urban and rural areas. The urban methods were tested in Hartford and Bridgeport, Connecticut. The list creation sources tested in Hartford were a commercial vendor, the United States Postal Service (USPS), and the list of addresses from the 1980 census including the updates from the 1980 coverage improvement operations. Each Hartford list was updated by a dependent canvass. In Bridgeport, the 1980 census and a vendor provided the initial lists. Both lists were updated by a dependent canvass and a postal casing check. The updates were done independently of each other resulting in four "final" Bridgeport lists to compare.

Summary of Results

Hartford

1. Relative to the initial vendor list, the initial USPS list contained 7.3% more housing units, and the initial 1980 list contained 7.2% more housing units. However, the percentage of invalid units in each list was 8.0%, 6.5%, and 3.9% respectively for the USPS, 1980, and vendor lists. So, looking only at the valid units in each list, the 1980 list had the best coverage. The 1980 list had 4.3% more valid housing units than the vendor list while the USPS list had only 2.8% more valid units.

2. Of the initial lists, the vendor list was the least expensive. On a per record basis, the 1980 list was three times more expensive and the USPS list was 19 times more expensive than the vendor list.

3. After updating, the 1980 list again had the best coverage, but coverage differentials were reduced considerably after the update. Relativ to the vendor list, the 1980 list had 1.7% more valid units, and the USPS list had 1.6% more valid units.

4. The cost advantage of the initial vendor list was diminished for the updated vendor list because of the relatively high cost of updating. In terms of valid housing units, the updated vendor list cost $0.69 per unit while the updated 1980 list cost $0.79 per unit. The cost of the updated USPS list was much higher at $1.62 per valid housing unit.

Bridgeport

1. As was the case for Hartford, the initial 1980 list provided better coverage than the initial vendor list. The 1980 list contained 6.9% more housing units and 3.9% more valid housing units. As evident from these data, the 1980 list contained more invalid units. The percentages of invalid units for the 1980 and vendor lists were 5.6% and 2.8%, respectively.

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2. The initial 1980 list was also more costly. Per record, the 1980 list cost 2.5 times more than the vendor list.

3. Of the four final lists, the 1980 list updated by a dependent canvass (1980/DC) was the best. Relative to the vendor list updated by a casing check (Vendor/CC), the 1980/DC list had 3.5% more valid units as compared to 2.9% more for the 1980 list updated by a casing check (1980/CC) and 2.3% more for the vendor list updated by a dependent canvass (Vendor/DC).

   Both updating methods reduced the coverage differential between the initial lists, with the dependent canvass reducing it even more than the casing check.

4. Overall, the least expensive list was the Vendor/CC list at $0.08 per valid housing unit. This list was followed in order from least expensive to most expensive by the 1980/CC list ($0.19), the Vendor/DC list ($0.72), and the 1980/DC list ($0.82). The lists updated by a dependent canvass were considerably more expensive than the lists updated by a casing check.

Conclusions

1. Although the vendor list had the worst coverage, it was the least expensive, and after only one update, the coverage gap was narrowed considerably. Applying the full census coverage improvement package may eliminate the gap altogether.

2. The USPS list was far more expensive than the other two list creation sources. While providing better coverage than the vendor list, it did no better than the 1980 census list. Therefore, the very high cost of the USPS list would favor the use of the 1980 list as an alternative to vendor lists. USPS knowledge would still be utilized inpart with either of the other two lists, of course.

3. The 1980 list had the best coverage before updating and slightly better coverage than the vendor list after updating. The 1980 list was slightly more expensive than the vendor list and considerably less expensive than the USPS list. Also, this list initially had better coverage of units within small (2-9 units) multi-unit structures. It should be noted though that by 1989, the coverage advantage of the 1980 list may very well disappear since the other lists would be much more up-to-date.

4. There are no results to indicate that any of the census coverage improvement operations could be eliminated in 1990 by using one of these list sources over any other.

5. Based on these data, the 1980 list is at the least a viable alternative to vendor lists in urban areas where vendor lists have insufficient coverage or are not available. For 1990, clearly the 1980 list should be given a great deal of consideration as the basis for the mailing list in those areas described above.

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I. Background and Methodology

A. Purpose of the Test

In the 1960 census, every housing unit was mailed an Advanced Census Report (ACR), and the householder was instructed to fill out the questionnaire and hold it for collection by a census enumerator. In 1970, every housing unit again was mailed a census questionnaire and in larger metropolitan areas, the respondents were asked to return the questionnaire by mail. Approximately 60 percent of the population was enumerated using this approach. This mail out/mail back method of self-enumeration was extended for the 1980 census to include over 90 percent of the population.

As self-enumeration by mail becomes increasingly predominant, an accurate mailing list is not just desirable - it is essential. In addition to the accuracy of the list, the methods for developing and maintaining a mailing list must also be cost efficient. Even with the expanded use of self-enumeration by mail, the total cost of conducting the Decennial Census has increased dramatically. For this reason, GAO has suggested that the Census Bureau, in preparation for the upcoming 1990 census, examine alternative methods of compiling and updating an address list [1]. In response, the Bureau conducted the Address List Compilation Test (ALCT). The ALCT is designed to evaluate the relative completeness and cost effectiveness of various combinations of list creation sources and updating procedures. The evaluation has been divided into two parts, urban and rural. For the urban ALCT, Hartford and Bridgeport, Connecticut are the sites that were selected for testing the different procedures. Hardin County, Texas and the county group of Gordon and Murray Counties in Georgia are the sites selected for testing the rural procedures. This memorandum pertains only to the urban ALCT. Results and a description of the rural tests will follow in a subsequent memorandum.

The list creation sources evaluated in Hartford and Bridgeport are given below. All three list sources were evaluated in Hartford, while in Bridgeport, the vendor and 1980 census were the list creation sources tested.

Initial List Sources

1. Vendor - The Bureau purchased an address list from a commerical vendor. Vendor lists are comparatively inexpensive, and many regularly undergo United States Postal Service (USPS) updating. This approach has been used successfully for urban areas in previous censuses. Hence, the vendor list is the standard against which all other lists are measured.

2. The United States Postal Service - As an alternative to the vendor list, the USPS was contracted to develop an address list for the Bureau on the theory that they were in a position to best develop an accurate and complete mailing list. Given that this approach is much more expensive than vendor lists, the USPS list must provide significantly better coverage to warrant serious consideration.

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3. The 1980 Census - The final list of addresses obtained from the 1980 census (including all updates - adds, deletes, corrections - from the various 1980 coverage improvement operations) was the second alternative to the vendor list tested in the ALCT. While it was without question the best list as of 1980, there is some concern about whether or not this list will be too outdated by 1990. The vendor and USPS files, if used for 1990, would both be vintage 1988 (i.e. the vendor file would be updated and the USPS file would be created probably as late as 1988). The difference in time between list creation for the various lists would create a coverage differential for 1990 that cannot be measured by the ALCT.

Updating Procedures

To account for the undercoverage in the initial list as well as the undercoverage created by the lag between initial list compilation and Census Day (about 18 to 24 months), an address list is generally updated several times using different procedures. In Hartford, all lists were updated by a dependent canvass. In Bridgeport, both initial lists were updated once with a dependent canvass and once with a casing check. The updates were done independently of each other resulting in four "final" lists to compare. To distinguish the Bridgeport lists from each other the following acronyms are used:

Vendor/DC - The original vendor list updated by a dependent canvass.
Vendor/CC - The original vendor list updated by a casing check.
1980/DC - The original 1980 list updated by a dependent canvass.
1980/CC - The original 1980 list updated by a casing check.

1. Dependent Canvass - Briefly, the dependent canvass is an updating technique whereby the addresses provided by each list source are printed in address registers. Census enumerators then canvass an area and make adds, deletes, and corrections to the lists directly in the registers.

2. Casing Check - The addresses from each list source are printed on cards and sent to the USPS to be "cased." During the casing check, carriers make corrections to the mailing address, delete duplicate and undeliverable addresses, and prepare blue cards for missing units.

B. Selection of the Test Sites

Cities primarily covered by the 1980 Geographic Base File (GBF) and containing between 40,000 and 60,000 housing units were considered as possible sites for the ALCT. The initial list included over 60 cities from which two final sites were selected. The selection of two sites of approximately 50,000 housing units was made for the following reasons:

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1. A sufficient number of housing units were necessary to ensure that small differences in coverage between list compilation methods would be reflected in the results.

2. Conditions and workloads under which the ALCT would be conducted should simulate as closely as possible those that would be present in an actual census. In this way, it is reasonable to assume that operational problems present during a census would occur during the ALCT.

3. Budgetary constraints dictated that no more than two cities of this size be selected. Also, since it was not an objective of the ALCT to weight results to a national level, two sites were sufficient for examining relative differences between methods.

In selecting the final sites, housing and population data were collected for each city. Based on the following criteria, Hartford and Bridgeport, CT were selected:

1. A substantial number of small (2-9 units) multi-unit structures

2. Significant proportions of Black and Spanish populations

3. Some non-inmate persons living in group quarters, e.g. persons living in a boarding house

4. Some growth between 1970 and 1980 as well as some new construction since 1980

Typically, the Bureau has had trouble enumerating areas possessing the first three characteristics, and for that reason, those criteria were used to select the final sites. That is, if any one method proves to be "best" in hard to enumerate areas, presumably it would be best in less difficult areas as well. In addition, areas with some (but not a great deal of) growth since 1980 were sought so as to study the 1980 list approach where it had a reasonable chance to be successful.

Several advantages arose from selecting two cities in the same region under the same regional office (Boston). The first is that any effect due to regional office administration was eliminated. For example, all training necessary to implement the test came from the same office. Second, since the procedures tested in Hartford were not all identical to those tested in Bridgeport, comparisons between procedures that were not both tested in the same site could only be made if the two sites were similar for most characteristics. As Table A shows, Hartford and Bridgeport are very similar with respect to the housing and demographic data used for selection, and it is thus reasonable to assume that they are similar in other "uncontrolled" characteristics [2].

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Table A: Urban Test Sites Data

Characteristics	Hartford	Bridgeport
Year-round Housing	55,233	55,230
Percentage of Year-round Housing Built 1970 - March 1980	8.0	7.9
Permits Issued for New Housing 1980 - October 1982	337	1142
Multi-unit Structures:		
Units at Address:		
1 unit	17,991	31,631
2-9 units	22,954	15,064
10 or more units	14,242	8,485
GQ Type:		
Inmate	2,632	1,486
Non-inmate	4,511	3,126
Percentage of Population...		
Black	33.9	21.0
Spanish	20.5	18.7
Per Capita Income	5,559	6,081
Percentage of Persons...		
With income in 1979 below poverty level	25.2	20.4
16 Years and over in labor force and unemployed 15 or more weeks in 1979	8.8	8.7
18 years and over who speak a language other than English at home and who speak English not well or not at all	30.5	26.8

C. Listing and Updating Procedures

1. Initial Lists

a. A commercial vendor contracted to provide mailing addresses to the Bureau. Since vendors customarily provide addresses by zip codes, the Bureau purchased the mailing address of every housing unit within specified zip codes. Zip codes corresponding to every post office that delivered mail within the city limits were included. To insure complete coverage,

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addresses in zip codes on the outskirts of the cities were also purchased. Addresses in the following zip codes were purchased for Hartford: 06095, 06103, 06105, 06106, 06109, 06110, 06112, 06114, 06117, 06119, and 06120.

This file contained 85,144 addresses. Zip codes 06109, 06117, and 06119 did not contain any addrersses within the city limits of Hartford. Zip codes 06095 and 06110 contained 8356 and 4847 addresses, respectively, of which only 24 addresses in zip code 06095 and 29 addresses in zip code 06110 were within Hartford. The addresses outside the city limits were excluded from the test. The total cost for the 85,144 addresses in the Hartford vendor file (of which 51,088 were inside Hartford) was $2,560.68.

The Bureau also purchased a vendor list for Bridgeport. Addresses in the following Bridgeport zip codes were purchased: 06430, 06432, 06497, 06604, 06605, 06606, 06607, 06608, 06610, and 06611. Zip codes 06430, 06432, 06497, and 06611 did not contain any addresses in Bridgeport. The total number of addresses and the total number of Bridgeport addresses in this file was 95,872 and 51,359 addresses, respectively. The total cost of the Bridgeport vendor file was $2,885.31.

b. The USPS also contracted to provide the Bureau with the mailing address of every housing unit within the city limits of Hartford. Unlike the vendor, the USPS had to create their address file specifically for the ALCT. Postal carriers listed on address listing sheets the mailing address of every housing unit on their routes. These listing sheets were later keyed to form the address tape file submitted to the Bureau. The USPS file contained 54,730 addresses for which the Bureau was billed a total cost of $53,026. Addresses from both the vendor and USPS were provided on computer tape in a format specified by the Bureau.

c. Prior to the ALCT, the computer file of addresses from the 1980 census had not been updated with the adds, deletes, and corrections from the 1980 coverage improvement operations. These updates were subsequently keyed for the files used in the ALCT. The Hartford and Bridgeport files contained 55,169 and 55,410 addresses, respectively. The total cost to prepare the 1980 file for use in the ALCT was $16,500.

2. Geocoding

To update the lists, Hartford and Bridgeport had to be divided into "areas." First, Census Block Numbering Areas (CBNAs) equivalent to 1980 census tracts were created. CBNAs were then split into groups of blocks containing approximately 500 to 600 housing units. These block groups were labeled Address Register Areas (ARAs). Seventy-two ARAs were formed in Hartford, and 79 ARAs were formed in Bridgeport. Each ARA was assigned a unique identifier which

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consisted of the four-digit basic CBNA number and an alphabetic suffix. Every block in each ARA was also assigned a three-digit block number. Block numbers were assigned uniquely within ARA. Hence, each block could be uniquely identified by its block number and ARA identifier.

Once the initial lists were obtained, each address from each list was assigned the ARA and block codes corresponding to the ARA and block in which the address was located. This assigning of geographic codes is known as geocoding. Each address was geocoded in one of three ways. First, an attempt was made to geocode each address by computer. This involved matching the mailing address for the unit to the 1980 Geographic Base File. If a match could be made, the 1980 census tract and block numbers were obtained for the unit. Then, through the use of an equivalency file, this information was converted to ALCT ARA and block numbers. Addresses which could not be computer geocoded were coded by clerks in the Census Bureau's Jeffersonville, IN processing office by using maps, telephone directories, and other sources of information. A third method was attempted for any address which still could not be geocoded. The address was printed on a card, known as a yellow card, and sent to the field office to be geocoded. There, a census employee attempted to locate the unit and assign codes. This field geocoding of addresses on yellow cards was done during the dependent canvass operation. A handful of addresses from each list could not be computer or clerically geocoded and were not printed on yellow cards. These addresses did not have enough address information to be geocoded, and therefore, no attempt was made to field geocode them. They were excluded from all further operations. Results of the geocoding operations are presented in Section II.A.1.d for Hartford and in Section II.B.1.d for Bridgeport.

3. Updating Procedures

a. Dependent Canvass Updating

The dependent canvass is an updating technique that requires census enumerators to canvass an ARA and make changes - adds, deletes, and corrections - to the listings as needed. All three lists in Hartford were simultaneously, dependently canvassed as were the two Bridgeport lists. In Hartford, the 72 ARAs were combined into geographically contiguous groups of between four and eight ARA's to form eleven equal-sized Assignment Areas (AAs). For Bridgeport, the 79 ARAs were combined to form 15 equal-sized AAs. Within each AA, enumerators (one assigned to each list) canvassed every ARA. Each enumerator was assigned a different starting ARA to minimize the chance of two or more enumerators canvassing the same ARA at the same time.

In order to dependent canvass each list, the mailing addresses of the housing units in an ARA were listed in a book called a Dependent Canvass Address Register (DCAR). Each DCAR contained the addresses from one list source for a single ARA. The addresses were printed by block in a sequence that related

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to the path of travel that the enumerator would take. Each basic mailing address was printed once along with the number of housing units at the address. That is, individual apartment designations were not printed. For each address in the DCAR, the enumerator verified that the structure existed and contained housing units, that the number of units listed at the address was correct, and that the mailing address was correct. If a structure did not exist or was non-residential (i.e. did not contain any housing units), the enumerator deleted the address in the register by drawing a line through it. If an enumerator canvassed less units or the same number of units as listed in the register, he/she entered the correct number in the appropriate column. If he/she canvassed more units than listed, he/she entered the correct number of units as well as the designation of each unit. Corrections to the mailing address were made to the appropriate listing on the register page. If a structure containing housing units existed on the ground but was not listed in the DCAR, the enumerator added the basic mailing address of the structure and all unit designations.

As a quality control measure, 9 to 10 units in each ARA were suppressed from the dependent canvass operation. If a suppressed unit represented a single-unit address or a special place, the address was not printed in the DCAR. If it represented a unit in a multi-unit structure, the basic address was printed but the count of units for the address was reduced by one. Prior to the start of the dependent canvass, quality control (QC) enumerators verified each suppressed unit. As the dependent canvass operation was completed for an ARA, the QC enumerator checked to see that the verified units were added by the dependent canvass enumerator. A missed unit counted as an error. Based on the number of errors that an enumerator had, the ARA was either accepted or rejected. Rejected ARAs had to be recanvassed. These canvassing and quality control procedures were basically the same procedures used in the 1980 precanvass operation.

Due to an initial misunderstanding in the field office, the completed 1980 DCAR was matched in the office to the completed vendor DCAR for three Bridgeport ARAs. When the entries in the DCARs disagreed for an address, a census enumerator field reconciled the discrepancy. Then, both DCARs were corrected to reflect what the field reconciler had determined to be correct. These entries were made in the same color pencil used by the original enumerator, so it was impossible to determine which entries were made by the enumerator, which were made by office staff, and which were made by the field reconciler. Since this would clearly have biased the results for these ARAs, they were dropped from the test. Fortunately, only three ARAs were involved when this was discovered and stopped.

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b. Casing Check Updating

Addresses from both Bridgeport lists were printed on address cards and sent to the USPS to be cased. The address card (Attachment A) consisted of two sections. Section A provided instructions to the carrier for marking the card. Section B contained the mailing address for the unit. This included house number/house number suffix, street name (including type, prefix and suffix), apartment designation or special place name, city, state, and zip code.

As requested by the USPS, the cards were sorted in carrier route sequence prior to being sent to the main Post Office in Bridgeport. Each carrier cased the cards for his/her route. If an address was in error, the carrier would mark the appropriate box in Section A and correct the mailing address in Section B. Carriers deleted duplicate and undeliverable addresses by marking the appropriate box in Section A. If a carrier did not receive a card for a housing unit, he/she prepared a blue card (Attachment A) for the missing unit.

Since both lists had to be cased and they could not both be cased simultaneously, there was some concern that if the USPS cased one complete list and then the other list, a learning bias might be introduced. To avoid introducing any bias, half of each list was sent in each casing check. Addresses from the 1980 list in the CBNAs given below were sent in the first wave along with addresses from the vendor list in all other CBNAs. The addresses from the 1980 list sent in Wave 1 were from CBNAs 701-709, 712, 714-716, 719-722, 724-726, 733, and 743. For Wave 2, the remaining addresses in both lists that were not sent during Wave 1 were included.

4. File Updating

a. Dependent Canvass Updated Files

At the completion of the dependent canvass, a corrections operation was implemented. The adds, deletes, and corrections made during the dependent canvass were transcribed to Dependent Canvass Corrections Address Registers (DCCARs) for keying. Like the DCARs, the DCCARs were printed by ARA. However, in the DCCARs each individual unit at an address was printed on a separate line. Clerks went through each DCAR line by line and transcribed the changes for each address to the appropriate lines in the corresponding DCCAR. Corrections to the mailing address were transcribed to each unit in the DCCAR. If a dependent canvass enumerator canvassed more units than the number of units listed in the DCAR, clerks determined which units were missing from the list by matching the designations in the DCAR with those in the DCCAR. Units determined to be

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missing were added to the next available blank line for the block. If designations in the DCAR did not correspond with those in the DCCAR, the clerk corrected those in the DCCAR to reflect what was listed by the enumerator and then added the missing units. In addition to adding missed units in this situation (the number of units canvassed was greater than the number of units listed), clerks transcribed the number of units canvassed to each preprinted listing in the DCCAR.

When enumerators canvassed the same number of units as listed, no action was taken by the clerk provided that no corrections were made to the mailing address. If an enumerator canvassed less units than were listed, the number of units canvassed for the address was transcribed to each unit at the address in the DCCAR. Units at addresses deleted by the dependent canvass enumerator were also deleted by the clerks during the dependent canvass corrections operation.

For each line in the DCCAR to which a transcription was made, clerks assigned an Action Code identifying the type of action taken by the dependent canvass enumerator for the address. Added units were assigned an Action Code of 'A', deleted units an Action Code of 'D', and corrected units an Action Code of 'C'. If only the number of units canvassed was transcribed to a unit in the DCCAR, the unit was assigned an Action Code of 'O'. Each line with a non-blank Action Code was then keyed. The computer files were updated with these keyed changes.

b. Casing Check Updated Files

The address cards and the blue cards were sent to Jeffersonville where the adds, deletes, and corrections were keyed. Each address that was keyed was assigned a numerical code which identified whether the unit was an add, a delete, or a correction. Later, when the computer files were updated, the numeric code was converted to an Action Code. As described earlier, added units were assigned an Action Code of 'A', deleted units a 'D', and corrected units a 'C'. An Action Code of 'O' was not needed for the casing check updated lists because the address of each unit was cased. That is, each unit address had the opportunity to be changed or deleted in the casing check. (Whereas enumerators in the dependent canvass were given only the basic address of a structure and a count of the number of units at the address. So, the dependent canvass enumerators were not able to delete individual units at an address.)

5. Operational Problems

The way in which the DCARs were printed created several problems during the dependent canvass. These problems affected the dependent canvass of the 1980 list more so than the other lists.

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a. Since only basic addresses (house number and street name; including street type, prefix, and suffix) and the number of units at each address were printed, a count of records having the same basic address had to be obtained via a computer algorithm. In the 1980 list, entries in the street name field were not standardized and hence, were not always consistent between records having the same basic address. (For example, some records may have had "W. Main St." in the street name field while others may have had "W. Main Street.") This standardization problem was not known of at the time the DCARs were printed. As a result, each unique spelling of the street name was printed as a separate address in the DCARs, and each address had a count of only the number of units with that variation of the address. Enumerators usually deleted all but one of the listings and entered the total number of units canvassed on the undeleted line. In most cases, the number of units canvassed was greater than the number of units listed since the number of units listed included only those units with that variation of the address. In that situation, the enumerator was required to list each unit designation.

   If the total number of units canvassed was less than or equal to the total number listed across all spelling variations (i.e. across deleted and undeleted lines), enumerators were obtaining apartment designations needlessly. For these cases, listings were deleted and units were added only because of the way in which the registers were printed. These deletes and adds were identified prior to the corrections operation and were not transcribed to the DCCARs for keying. Clerks searched each 1980 list DCAR to identify cases in which two or more lines were generated for the same basic address. For each such case, clerks added together the number of units listed from all lines with the same address and entered that value on each line in the appropriate column. Similarly, the number of units canvassed was totalled and entered on each line with the same address. If, after this procedure, the total number of units listed still did not equal the number of units canvassed, the appropriate add or delete information was transcribed to the DCCAR. The amount of time spent obtaining apartment designations in situations where it was unnecessary and the amount of time spent on this additional clerical procedure cannot be isolated. Therefore, the added cost of these updates cannot be determined. However, because of the volume of records involved in relation to the total volume, the cost on a per record basis is probably minimal.

b. The second problem relating to the printing of the DCARs was that special place addresses in the 1980 list were erroneously printed as housing units. If the address was actually a special place, the dependent canvass enumerator wrote the name of the special place in the remarks column of the DCAR and

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entered a '0' (zero) for the number of units canvassed. During the corrections operation, the clerks deleted the preprinted listing and added the address as a special place (the assumption being that a housing unit had been converted to a special place). If the enumerator canvassed the address not as a special place but as an address containing housing units, the clerks would have processed the address as such.

In either case, the action taken by the clerks would not accurately reflect what the original list had and what was canvassed by the enumerator. In the first situation, the original list contained a special place address and the enumerator canvassed a special place at that address. No clerical action was required. In the latter case, the original list contained a special place address and the enumerator canvassed housing units at that address. All special place records at the address should have been deleted and at least one housing unit record should have been added. To correct for the errors in the file resulting from special places being printed as housing units, unique Validity Status codes were developed (Validity Status will be defined in Section I.E.).

Note: This problem was unique to the ALCT and was not a result of any inherent problem with the 1980 list.

c. The problem of duplicate listings in the DCARs did not affect the USPS and vendor lists because entries in the street name field in those files were standardized before the files were received by the Bureau. Since the initial vendor file did not contain any special place records, that list was not affected by the way in which special places were printed. The initial USPS list did contain some special places. However, they were printed correctly in the DCARs. [Special place records in the USPS file were identified by a 'P' in a specific column of each record. Special place records in the 1980 file were identified by the number '1' in the same column. Apparently, the program used to print the DCARs recognized a 'P' as a legitimate designation of a special place record but not the number '1.']

D. List Matching

1. Computer Match

During the geocoding operation, each record in each file was assigned a sequencing index which was used to identify the street segment where the unit was located. The sequencing index along with the house number/house number suffix defined a unique basic street address (BSA). The computer match essentially identified for each list, the number of active (or non-deleted) housing unit and special place records at each BSA and compared those counts by BSA across all lists. Addresses that agreed across lists on the number of active housing units or were listed as a special

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place on all lists, were considered to be matched. This approach avoided the problem of minor spelling variations in the street name field which otherwise could have resulted in many more nonmatches.

A unit-by-unit match was not done for two reasons. First, in many cases involving multi-unit addresses, apartment designations were not provided by the original list (particularly the original USPS list), and the dependent canvass was not designed to obtain them for all situations. Second, with a unit-by-unit match, all such addresses would have been unmatchable and so would have required an additional field validity check (see below). At best, this would just provide another reading on the number of units at the address. Hence, it seemed inefficient to send out such addresses when the updating operations had already agreed on the number of units. This is particularly true since the only purpose of the matching operation was to reduce the amount of field verification needed to resolve count discrepancies between the lists.

2. Clerical Match

An attempt was made to clerically match BSAs that did not agree on number of units. Following the computer match, the addresses from each list were printed by ARA in match registers. A review status code was printed in the registers identifying which BSAs were not computer matched. The review status code also suggested a path of inquiry to be used by the clerks to resolve the case. If a case still could not be resolved, a reconciliation form was prepared for the address and sent to the regional office for final resolution in the field. Attachment B contains a copy of the field reconciliation form used in the ALCT.

E. Match Review

At the completion of the field reconciliation, all units were determined to be either valid or invalid. Housing units were valid if they existed within the test area and were used for residential purposes. Otherwise, they were invalid. Similarly, special places were valid only if they met the criteria of a special place. For tabulation purposes, a two character validity status code was assigned to each unit identifying whether the unit was valid or invalid. Clerks assigned validity status codes only to units at BSAs that were not computer matched. Table B describes the validity status codes assigned by the clerks.

With the exception of the two cases shown below, units which were clerically assigned validity status codes were keyed. Validity status status codes for the following units were not keyed:

1. Non-deleted units assigned a validity status code of V.

2. Deleted units assigned a validity status code of N.

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Validity status for those units and for units at BSAs that were computer matched were assigned by computer. Non-deleted units were computer assigned a validity status code of V, and deleted units were assigned a validity status code of N. Each file was then updated to include validity status.

Table B: Validity Status Codes

Possible entries for the first position were:

V - Valid - an address meets the criteria of being valid. The unit exists, is residential, and is located within the test area.
N - Not valid - the address is invalid.
P - Special place - the address is a special place.
H - Housing unit within a special place - the address is a housing unit at a special place.
I - Irreconcilable - Even after field reconciliation, there was not enough information provided to resolve the address.

Possible entries for the second position were:

T - The address was transferred from one block to another.
F - A special place address from the 1980 list was not printed in the DCAR as a special place.
Y - The address is a dependent canvass add that is a duplicate of a yellow card. This code was assigned only when both addresses were either housing units or special places.
D - A unit with a non-deleted action code was actually deleted during the dependent canvass.
P - There is more than one special place record at this basic address.
U - The casing check update corrected a housing unit record to be a special place and through matching or field verification the address was determined to be a special place.
O - The casing check update corrected a housing unit record to be a special place and through field verification the address was determined not to be a special place.
W - (Blank) This symbolizes none of the above.

F. Statistical Analysis - Methodology and Limitations

The analysis focuses primarily on relative net coverage of housing units which is the difference in the number of valid housing units in a list relative to another list, and on cost. Differences are expressed relative to the vendor list (when appropriate) because of the Bureau's success with using vendors in the past. An additional focus of this analysis is the effect of the dependent canvass and casing check on relative coverage.

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Measures of relative, not absolute, coverage rates are used in the analysis because no "true and complete" list of mailing addresses exists. Techniques exist for estimating the true number of housing units (e.g. Dual-System Estimation), but they depend on the accuracy of the list matching as well as assumptions regarding the independence of the listing procedures. Since the list matching was done as a means of reducing the amount of field reconciliation required and not for estimation, there are probably a number of erroneous matches as well as non-matches. Also, the independence criteria cannot be met. For example, vendors regularly take advantage of USPS knowledge by having them update their files, and the 1980 census list is simply an updated vendor file. For these reasons and because relative coverage measures are sufficient for ALCT purposes such estimation techniques are not being used.

All sites selected for the ALCT were selected purposively rather than as a probability sample because we wanted to insure that areas where coverage problems are prevalent were selected. Because of selecting a purposive sample, results are restricted to the test sites. This is not to imply, however, that there is not interest in knowing how these results would compare in other areas; areas with a higher growth rate, for example. On the contrary, the Bureau is presently examining ways in which this can be accomplished.

In addition to the results being limited to Hartford and Bridgeport, generalizations as to the effect on relative coverage if the test conditions were changed cannot be made. Specifically, it cannot be determined how relative coverage would be affected under one or more of the following conditions:

1. Subject each list to a complete coverage improvement package (e.g. APOC, precanvass, TOD/Casing checks, etc.).

2. Conduct a unit by unit type dependent canvass or an expanded APOC as are now being utilized for 1990 Test Censuses.

3. Compare the list of addresses from the 1980 census when it is nine years old (as it would be if used for 1990) with a current vendor or USPS list.

These limitations prevent us from emphatically stating that any one method would be best for 1990. Hopefully, the results will provide insight into what will not work for 1990 and hence can be eliminated from further testing.

II. Results

A. Hartford

1. Initial Lists

a. Coverage and Cost Data

Of the three initial lists, the USPS list appeared to provide the best coverage of housing units (although nominally better

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than the 1980 census list). The USPS list contained 7.3% more housing units than the vendor list, and the 1980 census list contained 7.2% more housing units than the vendor (Table 1). Coverage differentials are expressed relative to the vendor list since the vendor list, due to its low cost, our familiarity with using it, and the previous success we've had with it, is the standard against which the others are measured.

Examination of only the valid units in each list revealed that the USPS list also contained the most "noise" (i.e., the highest percentage of invalid units). Of the 54,313 units in the USPS list, 8.0% were invalid while the percentage of invalid units for the 1980 and vendor lists was 6.5% and 3.9%, respectively. After sorting out the invalid units, the 1980 list provided the best coverage. Relative to the vendor list, the 1980 list had 4.3% more valid units while the USPS list had only 2.8% more units.

At the basic address level, again the 1980 list provided the best coverage (Table 2). The USPS list, however, did not provide better coverage than the vendor list. Coverage at the basic address level for these two lists was virtually the same.

From a cost standpoint, the vendor list, as expected, was the least expensive. On a per record basis, the 1980 list was three times more expensive than the vendor list, and the USPS list was 19 times more expensive (Table 3).

The costs shown in Table 3 for the vendor and USPS lists are the total costs billed to the Bureau. A breakdown of the cost is not available for the vendor list. The total cost of the USPS list, however, includes the following breakdown:

1.	Carrier Training	$ 2,948*
2.	Address Listing	$ 3,702
3.	Processing	
	a. Key/verify	$ 2,842
	b. Re-verify	$ 677
	c. Programming	$ 41,891**
4.	Quality Control	$ 966
5.	Total	$ 53,026

* Includes a 35% markup

** Sub-contracting cost with 12.5% markup was $41,436. In-house computer time with 35% markup was $455. These two components add up to a total programming cost of $41,891.

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The cost of the Hartford 1980 list was actually one-half the total cost to key the 1980 coverage improvement updates for Hartford and Bridgeport. Cost data was not kept separately by site. Since the 1980 ALCT files for Hartford and Bridgeport were approximately the same size (55,169 total records in the Hartford file and 55,410 total records in the Bridgeport file), the cost was divided equally between the two lists. The cost of preparing the 1980 list included not only the keying of the updates but the the costs of programming, quality control checks, personnel (except headquarters staff), and computer time.

The total number of records shown in Table 3 for the USPS list was the total number of records received by the Bureau. The total number of records reported for the vendor list was the total number of records in the vendor file that were within the Hartford city limits. All records outside the city limits were excluded from the test altogether. The per record cost for the vendor list then can be thought of as a per usable record cost. The count of records for the 1980 list was the total number of records in the 1980 file after the 1980 coverage improvement updates were keyed.

b. Quality of Address

One indication of the quality of the addresses in each list is the number of corrections that were made during the dependent canvass. For the vendor list, 2,161 corrections to the apartment designation and 268 basic address corrections were made for a total of 2,429 corrections. The total numbers of corrections to the USPS and 1980 lists were 3,366 (3,364 apartment designation corrections and 2 basic address corrections) and 1,378 (1,352 apartment designation corrections and 26 basic address corrections), respectively. Using the number of corrections as a measure of quality indicates that the 1980 list had the highest quality and the USPS list the worst.

A second indicator of quality is the frequency of missing apartment designations in multi-unit structures. Although exact counts cannot be obtained without extensive clerical review, approximately one-third of the apartment designations were missing from multi-unit addresses in the USPS list. For the other two lists, the comparable figure is less than 5 percent. Again, this indicates that the USPS list was of poorer quality.

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Since geocoding an address is dependent upon the mailing address, the geocoding capability (computer and clerical) of each list can be thought of as a measure of quality. The figures given in Table 6 do not imply that one list was of better quality than the others [3]. They do, however, indicate that all three lists were of acceptable quality. Not only did all lists have a high percentage of total addresses that were computer geocoded, but each list had a very small number of addresses that could not be coded at all. With respect to computer geocoding, the USPS and 1980 lists did have slightly higher percentages than the vendor list though. The USPS list also had more addresses that could not be computer or clerically coded.

c. Summary Data

Some interesting observations come from the breakdown of coverage by size of address. First, although the 1980 list was the most complete overall, this was not true for all size categories. The USPS list provided the best coverage of housing units within large ($\geq$ 10 housing units) multi-units (MU). Relative to the vendor list, the USPS list had 7.7% more valid units within large MU while the 1980 list contained only 2.8% more valid units within large MU (Table 4). For coverage of single units and units within small MU, the 1980 list was the best. The second interesting piece of information is that the vendor list provided better coverage than the USPS list for single units. These results also hold true at the basic address level (Table 5).

The data by size of address is subject to some classification errors because size was determined for an address individually by list, according to the number of valid units in the list and not "truth." Therefore, an address could be classified in the USPS list, per se, as a large MU and in the vendor list as a small MU if, for that address, the USPS list had 10 or more valid units and the vendor list had less than 10 units (i.e. the vendor missed units at that address).

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d. Tables

Table 1: Coverage of Housing Units -- Original Lists

List	Total Units		Valid Units	
Vendor	50,634		48,640	
USPS	54,313	(7.3%)	49,988	(2.8%)
1980	54,268	(7.2%)	50,752	(4.3%)

Table 2: Coverage of Basic Addresses -- Original Lists

List	Total Basic Addresses		Total Valid Basic Addresses	
Vendor	24,126		23,634	
USPS	24,062	(-0.3%)	23,618	(-0.1%)
1980	25,017	(3.7%)	24,354	(3.0%)

Table 3: Cost Data -- Original Lists

List	Total Cost	Total Number of Records	Cost Per Record
Vendor	$ 2,560.68	51,088	$0.05
USPS	$53,026.00	54,730	$0.97
1980	$ 8,250.00	55,169	$0.15

Table 4: Valid Housing Unit Counts by Size of Address -- Original Lists

List	Single Units		Units Within Small MU		Units Within Large MU	
Vendor	16,272		19,364		13,004	
USPS	16,091	(-1.1%)	19,894	(2.7%)	14,003	(7.7%)
1980	16,724	(2.8%)	20,656	(6.7%)	13,372	(2.8%)

Table 5: Valid Basic Address Counts by Size of Address -- Original Lists

List	Single Units		Small MU		Large MU	
Vendor	16,272		6,832		530	
USPS	16,105	(-1.0%)	6,956	(1.8%)	557	(5.1%)
1980	16,726	(3.8%)	7,093	(3.8%)	535	(0.9%)

Table 6: Hartford Geocoding Tallies

List	Total Addresses in List	Computer Geocoding: Addresses Matched	Computer Geocoding: Addresses Uncoded	Computer Geocoding: Percent Coded	Clerical Geocoding: Addresses Coded	Clerical Geocoding: Uncodable Addresses	Clerical Geocoding: Yellow Cards
Vendor	51,088	48,163	2,925	94.27	2,914	11	6
USPS	54,730	53,358	1,372	97.49	1,272	100	0
1980	55,169	53,522	1,647	97.01	1,620	27	24
Total	160,987	155,043	5,944	96.31	5,806		30

2. Updated Lists

a. Coverage and Cost Data

The dependent canvass updating technique made significant reductions in the relative coverage differences between the lists. However, it did not eliminate those differences altogether. In terms of valid units, the 1980 list had 1.7% more units than the vendor list, and the USPS list had 1.6% more than the vendor (Table 7). An interesting observation is that the relative difference in total units between the USPS and vendor lists did not decrease as much as the relative difference between the 1980 and vendor lists even though the USPS and 1980 lists initially had about the same number of total units. This may be due to the amount of "noise" in the USPS list. That is, indications from past studies suggest that a list with a high percentage of invalid units is harder to update than a "cleaner" list.

As with the initial lists, the 1980 list provided the best coverage at the basic address level (Table 8).

The total cost to dependent canvass all five lists (three lists in Hartford and two lists in Bridgeport) was $168,550. Since it is reasonable to assume that the cost to update any one list is about the same for all lists, separate cost data by list was not maintained. Hence, the total cost was divided equally between the five lists giving an updating cost for each list of $33,710. For the vendor and 1980 lists, the updating costs were responsible for most of the total cost. Therefore, the cost advantage held by the initial vendor list was significantly reduced for the updated vendor list. For the updated lists, it is more meaningful to look at cost in terms of the "final product", or the number of valid housing units. On a per valid housing unit basis, the cost of the updated vendor list was $0.69 per unit while the updated 1980 list cost $0.79 per unit (Table 9). Due to the high cost initially, the updated USPS list was still considerably higher at $1.62 per valid housing unit.

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The total cost reported for each list in Table 9 is the total cost of the initial list plus the updating cost given above. The total number of valid housing units comes from column 3 of Table 7.

b. Summary Data

For the most part, the results relating to size of address stated in Section II.A.1.c for the original lists hold true for the updated lists with one noted exception. For units within small MU, the 1980 list by far provided the best coverage of the initial lists (6.7% more valid units than the vendor within small MU for the 1980 list compared to 2.7% more for the USPS list). However, after updating, the USPS list provided slightly better coverage than the 1980 list (and also the vendor list). The USPS list had 2.5% more valid units than the vendor within small MU, as opposed to 2.1% more valid units for the 1980 list (Table 10).

Except for the relative difference in coverage of small multi-unit addresses between the USPS and vendor lists, all coverage differentials were either reduced or eliminated by the update. The difference in coverage of small MU addresses between the USPS and vendor lists increased from 1.8% initially to 2.7% (Table 11).

The limitation stated earlier regarding misclassification of size of address applies here as well.

No mention of special places was made in the initial list results because it was not required that the list sources include special places for the ALCT. However, enumerators updating the lists were required to add missing special places. Of the initial lists, the USPS and 1980 list included special places while the vendor list did not. As can be expected in a situation such as this, the USPS and 1980 updated lists had significantly better coverage of special places than did the vendor list (Table 12).

Coverage of special places is a secondary evaluation criteria. This is because in a census, lists of special places are compiled independently of housing unit lists and from separate sources. Therefore, it is not critical that special places be included in this evaluation.

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c. Tables

Table 7: Coverage of Housing Units -- Updated Lists

List	Total Units		Valid Units	
Vendor	55,384		52,580	
USPS	58,488	(5.6%)	53,422	(1.6%)
1980	57,620	(4.0%)	53,452	(1.7%)

Table 8: Coverage of Basic Addresses -- Updated Lists

List	Total Basic Addresses		Total Valid Basic Addresses	
Vendor	24,941		24,332	
USPS	25,077	(0.5%)	24,502	(0.7%)
1980	25,611	(2.7%)	24,822	(2.0%)

Table 9: Cost Data -- Updated Lists

List	Total Cost	Valid Units	Cost Per Valid Unit
Vendor	$36,270.68	52,580	$0.69
USPS	$86,736.00	53,422	$1.62
1980	$41,960.00	53,452	$0.79

Table 10: Valid Housing Unit Counts by Size of Address -- Updated Lists

List	Single Units		Units Within Small MU		Units Within Large MU	
Vendor	16,685		21,211		14,684	
USPS	16,667	(-0.1%)	21,747	(2.5%)	15,008	(2.2%)
1980	17,007	(1.9%)	21,665	(2.1%)	14,780	(0.7%)

Table 11: Valid Basic Address Counts by Size of Address -- Updated Lists

List	Single Units		Small MU		Large MU	
Vendor	16,685		7,081		566	
USPS	16,667	(-0.1%)	7,269	(2.7%)	566	(-)
1980	17,007	(1.9%)	7,250	(2.4%)	565	(-0.2%)

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Table 12: Special Place Counts

List	Valid SP	Invalid SP	Total
Vendor	69	33	102
USPS	105	92	197
1980	107	93	200

B. Bridgeport

1. Initial Lists

a. Coverage and Cost Data

In Bridgeport, the 1980 list provided the best coverage at both the housing unit and basic address levels. At the housing unit level, the 1980 list had 6.9% more housing units and 3.9% more valid housing units than the vendor list (Table 1). At the basic address level, the 1980 list contained 5.0% more addresses and 3.7% more valid addresses than the vendor list (Table 2).

Although the vendor list was deficient with respect to coverage, it did contain less noise. Of the total number of housing units in the vendor list, only 2.8% were invalid. This is compared to 5.6% of the housing units in the 1980 list that were invalid.

As was the case in Hartford, the vendor list was the less expensive list. On a per record basis, the 1980 list was 2-1/2 times more expensive (Table 3). The cost reported in Table 3 for the vendor list was the total cost billed to the Bureau. The number of records reported was the number of addresses located inside the city limits. As explained earlier, the cost of the 1980 list was half the cost to key the 1980 coverage improvement updates for Hartford and Bridgeport, and the number of records was the number of records in the file after the 1980 updates were keyed.

b. Quality of Address

Nothing definitive can be stated about quality of address from looking at the total number of corrections to each list. Results solely from the casing check update imply that the vendor list was of slightly better quality (174 corrections to the vendor addresses versus 305 corrections to the 1980 list addresses). On the other hand, the dependent canvass update favors the 1980 list (1,688 corrections to the vendor addresses versus 1,157 corrections to the 1980 list addresses).

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One thing that can be determined though is that the dependent canvass as an updating technique will produce more "corrections" than the casing check. The term, "correction," does not imply that the final or corrected version of the address is more accurate than the original version. It simply indicates a change in the address. The larger number of corrections in the dependently canvassed lists is most likely due to Bureau enumerators and USPS carriers disagreeing as to the address of a unit or structure. Often, this occurs in multi-unit structures where unit designations used in mail delivery are not the same as physical unit designations. Since the USPS was involved in the creation or updating of both lists, it's understandable that most of the addresses would be recognizable (or deliverable) by USPS carriers during a casing check (and thus not in need of correction). Perhaps casing check corrections are a better measure of quality since ultimately the USPS will have to recognize the version printed on the census questionnaire in order to deliver it. If that is the case, both lists are of good quality since there were relatively few casing check corrections to either list.

As was the case for Hartford, the geocoding results indicate that the 1980 list had a slightly higher percentage of addresses geocoded by computer and that both lists were acceptable with respect to quality (Table 6, [3]). The results also indicate that the vendor list contained a substantial number of addresses that could not be coded either by computer or clerically. However, a large number of the 1130 addresses that could not be coded were from a specific housing project. Many of the housing units in that project had the same basic address but were in separate buildings. Units with the same address were distinguishable only by the building number which was not included with the address. Since the project was located in several blocks all of which were in the same ARA, the exact block number could not be determined for these addresses. As a result, they could not be printed in a DCAR and hence, were excluded from the dependent canvass update. Examination of the completed DCAR for the ARA involved indicated that most of these addresses were added by the enumerator. These addresses were, however, included in the casing check update since that update is not dependent upon geography. As it turned out, the ARA involved was one of the three ARAs matched in the district office and was, therefore, dropped from the test.

c. Summary Data

At the housing unit and basic address levels, the 1980 list was also the most complete for all address size categories (Tables 4 and 5). However, coverage of small multi-unit addresses for the 1980 list was not considerably greater (1.3%) than the vendor list.

Again, there is a limitation on the data by size of address due to the way in which size is determined (see discussion of Hartford results).

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d. Tables

Table 1: Coverage of Housing Units

List	Total Units	Valid Units
Vendor	48,667	47,293
1980	52,017 (6.9%)	49,114 (3.9%)

Table 2: Coverage of Basic Addresses

List	Total Basic Addresses	Total Valid Basic Addresses
Vendor	34,161	33,598
1980	35,868 (5.0%)	34,831 (3.7%)

Table 3: Cost Data

List	Total Cost	Total Number of Records	Cost Per Record
Vendor	$2,885.31	51,359	$0.06
1980	$8,250.00	55,410	$0.15

Table 4: Valid Housing Unit Counts by Size of Address

List	Single Unit	Units Within Small MU	Units Within Large MU
Vendor	28,853	11,071	7,369
1980	30,001 (4.0%)	11,472 (3.6%)	7,641 (3.7%)

Table 5: Valid Basic Address Counts by Size of Address

List	Single Unit	Small MU	Large MU
Vendor	28,853	4,537	208
1980	30,019 (4.0%)	4,595 (1.3%)	217 (4.3%)

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Table 6: Bridgeport Geocoding Tallies

List	Total Addresses in List	Computer Geocoding: Addresses Matched	Computer Geocoding: Addresses Uncoded	Computer Geocoding: Percent Coded	Clerical Geocoding: Addresses Coded	Clerical Geocoding: Uncodable Addresses	Clerical Geocoding: Yellow Cards
Vendor	51,359	48,347	3,012	94.14	1,882	1,130	39
1980	55,410	54,071	1,339	97.58	1,312	27	20
Total	106,769	102,418	4,351	95.93	3,194	1,157	59

2. Updated Lists

a. Coverage and Cost Data

Of the four "final" lists, the 1980/DC list was the best. Relative to the Vendor/CC list, the 1980/DC list had 3.5% more valid units as compared to 2.9% more for the 1980/CC list and 2.3% more for the Vendor/DC list (Table 7a). Tables 7b and 7c point out several additional observations. They show that:

1) The more complete the initial list was, the more complete the final list would be (Table 7b).

2) Both the dependent canvass and the casing check reduced the coverage differential between the initial lists, with the dependent canvass reducing it even more than the casing check (Table 7b). Neither method eliminated the differential though.

3) The dependent canvass picked up missed units better than the casing check (Table 7c). However, this appears to be dependent upon the completeness of the initial list. The relative difference between the Vendor/DC list and the Vendor/CC list was much higher than the relative difference between the 1980/DC and the 1980/CC lists (2.3% versus 0.6%).

The order from most complete to least complete carried through from the housing unit to the basic address level (Table 8). That is, in addition to being most complete at the housing unit level, the 1980/DC list was most complete at the basic address level as well; followed by the 1980/CC list; the Vendor/DC list; and, least complete, the Vendor/CC list.

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Overall, the least expensive list was the Vendor/CC list at $0.08 per valid housing unit (Table 9). This list was followed in order from least expensive to most expensive by the 1980/CC list, the Vendor/DC list, and the 1980/DC list. As Table 9 shows, the lists updated by a dependent canvass were considerably more expensive than the lists updated by a casing check. On a per valid housing unit basis, the cost of the 1980/DC list was over four times that of the 1980/CC list, and the Vendor/DC list cost nine times more than the Vendor/CC list.

As reported earlier, the total cost to dependent canvass the five urban lists was divided equally between the lists. The total cost to case both the vendor and 1980 lists was $2,516. This cost was also divided equally between the two lists cased.

b. Summary Data

Some curious results come from the breakdown of coverage by size of address (Tables 10 and 11). Although the 1980/DC list contained the most valid housing units, it was not the most complete in any of the three size categories. The 1980/CC list had slightly better coverage of single units, and the Vendor/DC list had slightly better coverage of units within both small and large MU. Also, the Vendor/CC list would compare much more favorably with the Vendor/DC and 1980/CC lists if it had relatively equal coverage of units within large MU. If coverage of units within large MU for the Vendor/CC list was roughly equal to the same coverage for the Vendor/DC list, the overall coverage differential would decrease from 2.3% to 1.1%. Similarly, the coverage differential between the Vendor/CC and 1980/CC lists would decrease from 2.9% to 1.7% (these data are subject to the limitation stated in Section II.A.1.c).

As for special places, the two 1980 lists had better coverage than the two vendor lists (Table 12). The initial Bridgeport vendor list did not contain special places. Coverage between each pair of updated lists having the same initial list source was equal. Again, a major emphasis is <u>not</u> being placed on coverage of special places because separate listing procedures are used to create the special place address list.

c. Tables

<u>Table 7a</u>: Coverage of Housing Units (Relative to the Vendor/CC List)

<u>List</u>	<u>Total Units</u>	<u>Valid Units</u>
Vendor/CC	51,289	49,399
Vendor/DC	52,825 (3.0%)	50,527 (2.3%)
1980/CC	53,938 (5.2%)	50,816 (2.9%)
1980/DC	54,966 (7.2%)	51,128 (3.5%)

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Table 7b: Coverage of Housing Units (Pairwise comparisons of the updated lists)

List	Total Units	Valid Units
Vendor/CC	51,289	49,399
1980/CC	53,938 (5.2%)	50,816 (2.9%)
Vendor/DC	52,825	50,527
1980/DC	54,966 (4.1%)	51,128 (1.2%)

Table 7c: Coverage of Housing Units (Pairwise comparisons of the updating procedures)

List	Total Units	Valid Units
Vendor/CC	51,289	49,399
Vendor/DC	52,825 (3.0%)	50,527 (2.3%)
1980/CC	53,938	50,816
1980/DC	54,966 (1.9%)	51,128 (0.6%)

Table 8: Coverage of Basic Addresses

List	Total Basic Addresses	Total Valid Basic Addresses
Vendor/CC	35,323	34,580
Vendor/DC	35,565 (0.7%)	34,721 (0.4%)
1980/CC	36,535 (3.4%)	35,349 (2.2%)
1980/DC	36,704 (3.9%)	35,400 (2.4%)

Table 9: Cost Data

List	Total Cost	Valid Units	Cost Per Valid Unit
Vendor/CC	$ 4,143.31	49,399	$0.08
Vendor/DC	$36,593.31	50,527	$0.72
1980/CC	$ 9,508.00	50,816	$0.19
1980/DC	$41,960.00	51,128	$0.82

Table 10: Valid Housing Unit Counts by Size of Address

List	Single Units	Units Within Small MU	Units Within Large MU
Vendor/CC	29,902	11,392	8,105
Vendor/DC	29,818 (-0.3%)	12,007 (5.4%)	8,702 (7.4%)
1980/CC	30,662 (2.5%)	11,484 (0.8%)	8,670 (7.0%)
1980/DC	30,546 (2.2%)	11,908 (4.5%)	8,674 (7.0%)

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Table 11: Valid Basic Address Counts by Size of Address

List	Single Units	Small MU	Large MU
Vendor/CC	29,902	4,455	223
Vendor/DC	29,818 (-0.3%)	4,668 (4.8%)	235 (5.4%)
1980/CC	30,662 (2.5%)	4,459 (0.1%)	228 (2.2%)
1980/DC	30,546 (2.2%)	4,625 (3.8%)	229 (2.7%)

Table 12: Special Place Counts

List	Valid SP	Invalid SP	Total
Vendor/CC	40	44	84
Vendor/DC	38	27	65
1980/CC	68	121	189
1980/DC	68	116	184

III. Summary and Conclusions

A. Summary of Results

1. The USPS list was by far the most expensive of the three sources in Hartford. In addition, it provided no better coverage than the 1980 census list, but did do slightly better than the vendor list. It also had the highest percentage of invalid original listings. Finally, although not shown in the data tables because we can only approximate these results, almost one-third of the units in multi-unit structures were missing unit designations (whereas this happened very infrequently in the other two lists). Operationally there were no major problems conducting a dependent canvass of this list, but keep in mind that this was a 1980 style precanvass where enumerators only had to check the number of units in multi-unit structures. The lack of unit designations would be a more serious problem using the current unit-by-unit precanvass. One final point is that this list seems to have been slightly more complete initially for large multi-unit structures than either of the other lists.

2. The vendor list was, as expected, the cheapest, and it also had the lowest percentage of invalid listings. On the other hand, it had the worst coverage both before and after updating. The coverage gap was narrowed considerably by the dependent canvass, and somewhat less by the casing check. The gap, however, was not eliminated. There were no major operational problems dealing with this list.

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3. The 1980 list had the best coverage both before and after updating. While somewhat more expensive than the vendor list, it was still much cheaper than the USPS list. While it had a higher percentage of invalid listings than the vendor list, it had a slightly lower percentage than the USPS list. It is also interesting to note that this list appears to have been much better than either of the others with respect to initial coverage in small multi-units. An important point to keep in mind here, of course, is that there does not appear to have been much growth (or other change) in the housing unit inventory in the four years since 1980, so these results cannot answer how well this approach would work when the lists are nine years old (in 1989), particularly for areas where a lot of change will have taken place since 1980. Presumably, it would not do as well under such conditions.

4. A general point of interest is that, consistently, the more complete the initial list, the more complete the updated list.

B. Conclusions

1. While the USPS list did provide better coverage than the vendor list, it did no better than the 1980 census list. Even if other factors should eliminate the 1980 list from consideration, the very high cost of the USPS list would probably rule it out. It should be kept in mind that USPS knowledge likely would still be employed with either of the other two lists (e.g.; APOC and other casing checks; residual effects of postal activities from 1980 for the 1980 list; as part of regular updates done by many vendors).

2. While the vendor list was the cheapest and "cleanest" (fewest invalids), it also had the worst coverage. Still, we have a lot of experience in using these lists, and the cost difference relative to the 1980 list and USPS list can't be ignored. It is also true that after only one update, the coverage gap was narrowed considerably, and it may very well be that the full census coverage improvement package might eliminate this gap altogether. After all, the 1980 list used here is nothing more than a vendor file plus all the 1980 coverage improvements. Also, by 1989, the coverage advantage of the 1980 list may dissipate (especially in high growth areas) since the vendor files will be much more up-to-date. (This would also be true for the USPS list, but again cost would be a factor.)

3. Given that there has not been much change in these areas since 1980, it should not be too surprising that the 1980 list did well (i.e., with all the coverage improvement efforts in 1980, this list should be the most complete except for changes since 1980). While it is reasonable to assume it would not do well for 1990 in high growth areas, these results indicate that the 1980 list is at least a viable alternative when vendor lists are not available or are of suspect quality/completeness.

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4. Given that each initial list benefitted from updating and that even the best original list would not have been as complete as any updated list, there are no results here to indicate that we could eliminate any of the census coverage improvement operations by using one of the list sources over any other.

5. Based on the coverage and cost data above, the approach in urban areas indicated for 1990 is to use the list of addresses from the 1980 census in combination with vendor lists as the basis for our mailing list. That is, pre-identify urban areas where the vendor list would have insufficient coverage and areas where a vendor list is not available at all. In those areas, the 1980 list would be the base list of addresses, and in all other urban areas, vendor lists would be used.

References

[1] U. S. General Accounting Office. A $4 Billion Census in 1990? Timely Decisions on Alternatives to 1980 Procedures Can Save Millions. Washington, DC, 1982.

[2] Memorandum for Stanley D. Matchett, from Charles D. Jones; Subject: "Test Sites for the ALCT," Address List Compilation Test Memorandum Series Chapter 3, Document 2, Supplement 1; February 18, 1983.

[3] Memorandum for the Record, from Pat Angus; Subject: "Revised Geocoding Tallies for the Address List Compilation Test (Urban Sites)," Address List Compilation Test Memorandum Series Chapter 7, Document 2. Revision 1; April 20, 1984.

[4] Memorandum for Stanley Matchett, from Charles D. Jones; Subject: "Evaluation of Address List Compilation Methods," Address List Compilation Test Memorandum Series Chapter 3, Document 4; April 21, 1983.

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Attachment 2

STATUS OF 1980 STUDIES
PRELIMINARY EVALUATION RESULTS MEMORANDA SERIES (PERMS)

Study Name	PERM Status*
Coverage evaluations and coverage measurement procedures	
Census Geocoding Error Study	PERM 106, 6/85
Demographic Analysis Estimates of Census Coverage	PERM 18, 12/82
1978 Current Population Survey(CPS)/Internal Revenue Service (IRS) Administrative Records Match	PERM 21, 7/82
Duplication Study	PERM 44, 2/83
Forward Trace	9/85 - final
Housing Unit Coverage Study	PERM 109, 8/85
Housing Unit Overcount Study	PERM 10, 6/81
IRS/Census Match	PERM 51, 7/83
Post Enumeration Program	9/85 - draft
Puerto Rico Labor Force Match	PERM 91, 9/84
Retrospective Trace	PERM 48, 6/83
Experimental program	
Alternative Questionnaires	PERM 93, 11/84
Alternative Training	PERM 94, 11/84
Experimental Student Intern Program	PERM 20, 2/82
Job Enrichment Feasibility Study	PERM 24, 4/82
Telephone Follow-up for Nonresponse	PERM 58, 8/83
Update/leave	PERMS 66, 70, 76, 79, 82, 86, 96
Content evaluations	
Annual Housing Survey/Census Match	PERM 100, 7/85
Content Reinterview Study	PERM 67, 9/83
1980 CPS - Census Match for Content Evaluation	4/85 - cancelled
Utility Costs	PERM 59, 8/83
Coverage improvement evaluations	
Precanvass	PERM 92, 10/84
Non-household Sources	PERMS 97, 98, 99
Vacant/Delete Check	PERM 97, 11/84
Prelist Recanvass	PERM 84, 8/84
Local Review	PERM 81, 7/84
H4 Edit	PERM 83, 8/84
Spanish Questionnaires/Assistance Centers	PERM 90, 10/84
Dependent Roster	PERM 85, 9/84
Casual Count	PERM 87, 9/84
Were You Counted?	PERM 85, 9/84
Post Office Effectiveness	PERM 52, 6/83

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Processing and quality control evaluations

Census Allocation Program	9/85 - final
Diary Address Program	9/85 - final
Field Quality Control	12/85 - final
Processing Center Coding Performance	PERM 68, 1/84
Various Quality Control Related Evaluations	PERMS 2-4, 7, 11, 13, 14, 23, 26-30, 33, 34, 36, 38-40, 47, 50, 53, 57, 60, 68, 73, 77, 78, 89, 103
Curbstoning	11/85 - final
Field Edit Follow-up	9/85 - final
Selection Aids Evaluation	PERM 107, 7/85
Census Unclassified Units by Race	PERM 108, 7/85

Other Studies

Applied Behavior Analysis Survey	PERMS 61, 71
Census Logistical Early Warning Sample	PERMS 22, 46
Components of Variance Study	final date not decided
Knowledge, Attitudes and Practices Survey	PERM 31, 9/82
Total Error (Upper/Lower bounds on Census Variance)	PERM 95, 1/85

* Those PERMS that have been completed are shown as "PERM" followed by the PERM number and date completed. Those PERMS that are not completed are shown as a date followed by "final" or "draft."

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Attachment 3 (Part 1)

FY 1985 PRE-TEST EVALUATION PLANS page 1

EVALUATION PLAN	PURPOSE	RESULTS
Address Control File (ACF) - Adds, Deletes and Corrections.	Study the problems and rules for the ACF to make changes (e.g., adds) by specific operation (such as the advance post office check (APOC), etc.) Determine an optimal set of deletion rules. Provide totals for each of these operations.	Final - 11/85 Preliminar Results - 10/85 (Counts of the number of changes to the ACF by type will be available as each operation ends.)
Coverage Edits and Follow-ups	Document how automated edits are done. Determine the edit failure rates and the yield from edit follow-up for each coverage question. Determine the percent of cases with a "no" response for the HI-HO, and usual home elsewhere (UHE) questions that also have a written entry.	Final - 1/86 Preliminary Results Issued 4/85
Specification and Evaluation of Sample Designation	Develop the necessary sampling procedure and specifications (both for computer sampling and field sampling) and provide for the tabulation of summary counts of sample results at various geographic levels. Object is to see that the sample selection systems produce a representative, well-balanced sample.	Final - 11/85
Quality of ACF Updating	Determine if the automated system is accurately performing tasks previously done by clerical means.	Final - 9/85
Cost and Timing of the Two-Stage Census	Compare the two-stage census with the one stage in terms of general cost and nonresponse follow-up cost. Cost and timing data for the second stage nonresponse follow-up (which was cancelled) will be estimated based on actual figures from the first stage. The study will also compare return rates for 100% data collected from the single stage panel, and the first stage of the two-stage panel.	Final - 12/85 Preliminary Results - 9/85
Evaluation for Unit-by-Unit Precanvass	Test the operational feasibility of doing a unit-by-unit (instead of a structure-by-structure) precanvass	Final - 9/85

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EVALUATION PLAN	PURPOSE	RESULTS
	the effect of this on the automated systems. Attempt to evaluate the effect of the unit-by-unit apartment corrections on the accuracy of the delivery and follow-up of questionnaires in multi-unit structures.	Results Issued 5/85
Evaluation of Data Quality	Analyze the effect of the presence of long forms during the field work on the 100% data collected in the modified 1980 panel.	Final - 10/85
Split Panel Design and Selection	Develop and implement the sample design and selection procedures for selecting the "small" geographic areas (blocks) for each panel. Evaluate the validity of the split using 1985 data.	Final - 10/85 Preliminary Results - 9/85
Control of Jersey City Split Panel	Evaluate how well the independence of the split panels is controlled.	Final - 9/85 (after nonresponse followup completed)
Coverage Measurement in the Two-Stage Census	Using "proxy" measures, compare the relative coverage of the two-stage census panel in Jersey City with the one stage panel. May also compare relative coverage of long vs. short forms.	Final - 10/85 Preliminary Results - 9/85
Two-Stage Match	Conduct match between Jersey City second-stage long forms to first stage short forms. If two-stage is pursued, will explore ratio estimation and determine if match indicates some bias between first and second stage.	Cancelled (Second stage cancelled owing to low mail response)
Use of "Exception Lists" for Follow-up	Assess the feasibility of using exception lists (extracts of the master address list which do not contain information on single unit addresses from which we received a questionnaire). Determine whether there is a potential for errors when enumerators do not have access to full lists, and the potential for spurious adds. Determine whether approach will reduce the potential for adding missed units. Will also look at a sample of exception lists and compare to the ACF to determine the extent to which apartment mixups were a problem and identify some characteristics of units with delivery problems.	Final - 9/85 (Documentation of effect of using exception lists. Review of apartment mixups and characteristics will be available after October).

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EVALUATION PLAN	PURPOSE	RESULTS
Characteristics of Nonresponsence	Determine the characteristics of single and multi-units, and of persons in units that are enumerated at various stages of nonresponse follow-up and whether these characteristics differ in Tampa and Jersey City.	Final - 3/87
Quality Control - General (Not a Formal Evaluation)	Determine the operational feasibility of the quality control plans for operations such as MFOC, kit assembly, printing/labeling, exception list printing, check-in, data capture, name capture, optical mark recognition (OMR) data capture, edit and ACF update clerical operations.	Final - 12/84-9/85 (Reports are being submitted for each operation)
Nonresponse Follow-up Quality Control (QC)	Explore when field employees are fabricating data during nonresponse interviews.	Final - 1/86 Preliminary Results - 9/85
Peer Training for Replacement Enumerators	Determine feasibility and cost benefits of training replacement enumerators by one-on-one "peer" training method.	Final - 2/86
Precanvass QC	Determine if the precanvass quality control is an effective mechanism for identifying enumerators who are not canvassing thoroughly.	Final - 12/85 Preliminary Results - 9/85
Storefront Supervisory Structure	Determine whether or not cost savings result from the storefront supervisory structure in the nonresponse follow-up operations in Tampa, and whether this system provides a better control ove field enumeration operations.	Final - 12/85 Preliminary Results - 9/85
Use of Telephone Company Lists	Determine the feasibility of using the telephone numbers present on local telephone company lists to update the ACF with telephone numbers for follow-up operations (post-census lab test).	Final - 11/85
Field Employee Selection Aids (SAAs)	Examine the work behaviors employed in the census jobs as well as the knowledges, skills, abilities, and personal characteristics required to perform these behaviors. Investigate new techniques to be used to select census workers and revise current procedures.	Final - 10/85

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FY 1985 PRE-TEST EVALUATION PLANS

EVALUATION PLAN	PURPOSE	RESULTS
Questionnaire Evaluation (and Mail Reminder Cards)	Examine indicators which may suggest problems with the public's use of the CMS questionnaire. Analyze mail return and item nonresponse rates by various geographics, and whether return rates are affected by respondents receiving a mail reminder card.	Final - 12/85 Preliminar Results Issued 6/85 (Reminder Cards Only)
Post Enumeration Survey (PES)	Determine how computerized matching changes PES design (i.e., extent of search, definition of correct and erroneous enumerations, and treatment of nonmail. Test combining the undercount sample and the overcount sample and employ two direction match. Investigate advantages of a black sample and its cost. Determine whether alternative questionnaire can be used to reduce follow-up and nonresponse. Develop cost estimates of component operations.	Final - 6/86 Preliminary Results - 5/86
Forward Trace Study	Examine different tracing strategies and evaluate whether a reverse record check is feasible.	Final - 4/85
Hard to Count Study	Test whether the composite list (negative) approach can be used individually or in combination to produce coverage estimates for problem groups (e.g., males age 19-40). These will be tested in conjunction with the PES.	Final - 5/86 Preliminary Results - 12/85 (First Estimate)
Computer Matching	Develop, test, and refine computerized matching system and investigate ways to combine computerized matching with clerical matching. Determine capabilities of computer matching records in the post-enumeration survey, and forward trace. Evaluate advantages and limitations as well as cost of computer matching.	Final - 12/85
CMS Feasibility Study	Data on the CMS's performance such as the number attempted to [illegible], number passed, number failed due to machine or respondent errors, number of questionnaires processed per hour, per day, etc., will be analyzed to determine feasibility of system.	Final - 12/85
Nonresponse Followup	Will analyze why people did not complete and return their	Final Results Issued 7/85

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Attachment 3
(Part 2)

Preliminary Research and Evaluation Memorandum Series Index

Number	Subject
1	Establishment of Preliminary Research and Evaluation Memorandum Series
2	1985 Pretest Results of the Quality Control of the Ink Jet Labeling Operation for the Advance Post Office Check
3	1985 Pretest Verification Results of the Assembly of Precanvass Kits
4	1985 Pretest Quality Control of Keying Advance Post Office Check Data
5	1985 Prestest Verification Results of the Printing of Precanvass Address Register
6	1985 Prestest Results of the Advance Post Office Check (APOC) II in the 1985 Pretest
7	1985 Pretest Results of the Systems Test for Precanvass Updating of the Address Control File
8	1985 Tampa, Flordia Test Census - Review of Age Reporting
9	Results of the Systems Test for Collection Office Updating of the Address Comtrol File
10	Results of the Precensus Local Review and the Special Place Prelist Updates to the Address Control File
11	Results of Blue Card and Yellow Card Updates to the Address Control File
12	Preliminary Unit-by-Unit Precanvass Findings
13	Documentation of the Pre-Mailout Results of the Evaluation of the 1985 Jersey City Split Panel Design and Sample Selection
14	1985 Test Census Results of the Quality Control of the Advance Post Office Check in the 1985 Pretest
15	1985 Test Census Quality Control Results or the Printing of Keyed Questionnaires
16	1985 Test Census Verification Results of the Optical Mark Reader Data Capture
17	1985 Test Census Final Verification Results of the Processing Office Mail Returns Questionnaire Check-In

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Number	Subject
18	Documentation of the Split Panel Design and Selection for the 1985 Jersey City Test Census
19	Focus Groups
20	Final Verification Results of Assembled Kits
21	Verification Results of the Keying of 100-Percent Data
22	Mail Response Results for Jersey City and Tampa
23	Results of Nonresponse Follow-up Supplement in the 1985 Test Censuses of Jersey City and Tampa
24	1985 Test Census Request for Spanish Questionnaires: Results
25	Quality Control Results of Edit Review

Premilinary Research and Evaluation Memorandums that have not been issued as of August 19, 1985.

*	Results of the Precanvass Address Register Keying and Address Control File Updating Operations
**	Reference File Enhancement Study/1985 Test Census, Tampa, Flordia

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Status of 1985 Test, 1990 Decennial Census
(000)

	Annual Budget	October 1984 - June 1985 Accurals	Undel. Orders	Administrative Reservations	Balance
1985 Test					
Planning	2594	2289	145	7	153
Field Collection Office Space	195	160	0		35
Communicty Awareness/Publicity	182	151	22		9
Advanced Post Office Check (APOC)	25	29			(4)
Geography	188	92			96
Data Collection 1/	1841	1713	7	2	119
Data Processing/Capture	644	725			(81) 2/
Evaluation	1668	871	12		785
TOTAL	7337	6030	186	9	1112

1/ Data Collection	Annual Budget	Field Nat'l Summary-thru 6/85	Dist. of Other Costs	Balance
New Jersey	846	941	43	(138)
Tampa	995	687	51	257
TOTAL	1841	1628	94	119

2/ This is not a problem because we expect surpluses in other categories to cover the cost [illegible] the tests to be completed within budget.

Attachment 6

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QUESTIONNAIRE CONTENT AND DESIGN

THURSDAY, SEPTEMBER 26, 1985

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON CENSUS AND POPULATION,
COMMITTEE ON POST OFFICE AND CIVIL SERVICE,
Washington, DC.

The subcommittee met, pursuant to call, at 10:55 a.m., in room 304, Cannon House Office Building, Hon. Robert Garcia (chairman of the subcommittee) presiding.

Mr. GARCIA. Good morning and welcome to our hearing on the questionnaire content and design of the 1990 decennial census.

This is the second of our series of hearings on the Census Bureau's plans and activities for the 1990 decennial. Today we will focus on three areas of the Bureau's efforts on the questionnaire: First, content planning and testing process; second, plans for questionnaire design testing; and third, results from the 1985 test of the two-stage census procedure.

In 1987 the Census Bureau is required to submit to Congress a report containing proposed content of the 1990 decennial census questionnaire and the types of information to be compiled in the decennial. The Bureau's plans are well underway. It is already making its decisions as to the content of the questionnaire. This hearing is timely in that it will give the public an opportunity to examine the Bureau's plans.

We will first examine the Census Bureau's plans to see if the Bureau has allowed for sufficient public participation in its decisionmaking process, especially regarding the changes it is considering on the questionnaire content. Then we will review the criteria the Bureau uses in making its decisions. We will also review the changes the Bureau is considering for the decennial questionnaire content and design.

Today Mr. Peter Bounpane, who is the assistant director for demographic censuses of the Census Bureau, will be our only witness to ensure that we cover the Bureau's plans regarding questionnaire content and design thoroughly.

And to you, Mr. Bounpane, let me excuse myself. I thought I would get here without any trouble by 10:30, but the Eastern Airline shuttle was backed up 15 planes at LaGuardia. But I should know better really. What can I say? I just hoped I could get here by the 10:30 starting time.

But, anyway, you have been here before, so proceed.

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STATEMENT OF PETER A. BOUNPANE, ASSISTANT DIRECTOR FOR DEMOGRAPHIC CENSUSES, U.S. BUREAU OF THE CENSUS, ACCOMPANIED BY ARTHUR YOUNG, CHIEF OF HOUSING STATISTICS DIVISION AND ROGER HERRIOT, CHIEF OF POPULATION DIVISION

Mr. BOUNPANE. Thank you, Mr. Congressman. I am glad to be here and continue our dialog with you.

I am just going to make a few short remarks rather than read our testimony and leave time for questions and answers. I do have with me today two people that I would like to introduce, and perhaps they will help on some of the questions. One is Roger Herriot; he is the chief of our Population Division. The other is Arthur Young; he is the chief of our Housing Division. These are two major aspects of the census. I note today we are going to talk about general planning, but as we go into the next year or so and we get into more details, I think it will be good for you and the committee to have more contact with these two people because they are far more expert on the details than I would be.

Let me just start out with a few words about our planning process on the questionnaire and where we are today. We started out with a look at 1980. This is standard for whether it is the questionnaire or any aspect of the census. That entails many things in the evaluation of the quality of the questions that were asked in 1980: Were respondents able to answer them properly? How reliable are their answers?

It includes some other things as well. Should some of the aspects of the questionnaire be continued? Let me give you an example there. If you look at the 1980 questionnaire, you find two different questions on how many units are at this building. They were asked for two different reasons. One was to actually make a data tabulation of the number of units at the structure. Another reason was to have a coverage check. We think we had mailed to every unit in a building. We wanted to ask the residents of the building how many units do you have here in order to check that against the number of mailing packages we mailed out to see if we perhaps missed a unit. We did not think we could ask that in one question and hence there were two. We have changed that, at least preliminarily, for 1990. It will not be there in two questions, rather in one, and that will help, I think, the format and the appearance and the ease of answering the questionnaire. So looking at the 1980 involves many things.

The second aspect of the planning is to go out and gather user input for the questionnaire, and we have done this in various ways. Let me just summarize those.

The first is to hold a series of local public meetings across the country, at least one in each state, in total about 70, and they will be finished next month. These meetings concentrated primarily on getting input from local users about the census. And I have an interim report from those meetings which I will be glad to leave with the committee today. If you look at that, it also shows you a little bit about who tended to attend these meetings and in general there were a good number of officials from local areas and States, State

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governments as well as academia, who generally attended these meetings.

The second aspect of user input is with the other Federal agencies in town through an operation we call the Federal Agency Council, something we have done for the last several censuses. Many things come out of that process. It basically involves the agencies in town who are interested in the census itself and what data it produces. They meet under the chairmanship of the Office of Management and Budget and discuss Federal uses of data from the census.

One of the first steps in that process was to document the Federal uses of the data from the census and the anticipated Federal uses of the data from the next census; and we also have, which we can leave with the committee today, a copy of that documentation. It is relatively large, but it does give a flavor for the varied uses of census information.

Another aspect of the Federal Agency Council were the meetings themselves, where we met with each of the other Federal agencies; and to help in those general meetings we had small working groups which were called Interagency Working Groups and they were by topic so there was an interagency working group to address labor force statistics, there was an interagency working group to address the race or Spanish origin questions and those types of topical groupings.

Each of those working groups has met, written a report and we also have a set of summary reports from those working groups which we can leave with the committee as well.

In addition to these relatively formal structures, the local public meetings, and the Federal Agency Council, we also have held a series of special purpose meetings to get user input. I will not list all of those, but an example is the recent race and ethnic conference we had here in town. We had a specialized conference to address issues about which housing questions should be on the census. We had time on the agenda of an organization called the Association of Public Data Users, APDU for short, and we discussed with them the uses of census data. So there are also a number of specialized meetings to address the census questionnaire.

If you put that all together, where are we now? We have developed a set of questions which we think should be tested for possible use in 1990. The vehicle for testing is the National Content Test. It is a large-scale national mail-out scheduled for next spring, and it is a subdivided sample so that some households get one kind of questionnaire, another household gets a different kind of questionnaire, and then we compare the results when we get them back. So we test different questions, new ones, and we test different question wording to see if one has a better response than another.

That is the major testing vehicle for gathering information on the questionnaire items. The timing is to have that conducted next spring and then to analyze it between next fall and next winter, leading to the date you mentioned in your opening remarks, April 1987, when we must come to the Congress and say these are the subject areas we plan to ask in the 1990 census.

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Just a few words on questionnaire design itself. I know that is also of interest. I do not have as much to report on that as the content of the questionnaire. It is a little early yet. All I can say is we share the committee's concern that the questionnaire be as user friendly as possible; that the easier it is for a respondent to fill it out, the better the census will go. Like other things in the census, we face a conflict here. The more automation we use in the processing of the census, the more restricted we are in how we design the questionnaire. The film-to-tape process requires certain quality paper, certain kinds of marks on the paper, et cetera. The optical mark reading approach has less restrictions than that, but still some restrictions in terms of how the questionnaire is designed. The least restricted design would come if we data entered, direct data entered, data key the data. However, that is a very cumbersome process and one in which there is some doubt it could be accurately done in the timeframe that it would need to be done in 1990. So we are going to have to balance the need for automation with our desire to make that questionnaire as easy for a respondent to fill out as possible. I think we have made some significant progress already over 1980.

In conclusion, let me say that we share with you the need to have these discussions early, and 1986, calendar year 1986, is the key year for these kinds of discussions. We do not want it to come as a surprise in April of 1987; rather to work with you over the next year so we can solve problems before that date.

That concludes my remarks, and I will be glad to try to answer any questions you might have.

[The statement of Peter A. Bounpane follows:]

REMARKS OF THE ASSISTANT DIRECTOR OF THE BUREAU OF THE CENSUS, PETER A. BOUNPANE

Thank you for this opportunity to present an overview of recent developments at the Census Bureau. Today, as requested by the Subcommittee, I will discuss three aspects of our 1990 census planning. I will concentrate on our content planning and testing process. Then I will summarize planned work on questionnaire design testing and, finally, results from our 1985 test of a two-stage census procedure.

The selection of content for a decennial census begins long before the date when we report proposed content to the Congress (three years before Census Day). The process for determinining census questions starts with an assessment of the quality of the data from the preceding census and an assessment of how extensively these data are being used. The Content Reinterview Study conducted as part of the 1980 census has provided information on the quality of data from selected questions. Other information on quality comes from analyses of 1980 census nonresponse rates and comparisons of national level census data with similar data from Federal surveys.

We have a number of forums for discussing data needs. Local public meetings (LPMs), sponsored by the Census Bureau and local and state organizations are a primary source of information on the uses of the data. The LPMs have afforded a wide variety of users, from the private and public sectors alike, the opportunity to express critical judgments on the adequacy of the data and to suggest new or modified data elements for the upcoming census. At least one meeting had been held in every state and we will complete the last of nearly 70 such meetings this October. Other forums and special outreach efforts—such as conferences dealing with housing issues or the needs for data on race and ethinic groups—also are major sources of suggestions on the content of the next census.

For determining Federal data needs, the Census Bureau has sought counsel from other agencies, both directly through 10 Interagency Working Groups and through OMB's Federal Agency Council on the Decennial Census. These exchanges have been important channels of communication. They enlighten the Census Bureau

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about data needs while sensitizing users about the kinds of concerns that must be weighed in developing each element of the census.

A general principle governs the selection of subject content for the census, including the specific questions that are used: The census must be aimed solely at data that are required to meet well-demonstrated public needs or that are required to fulfill legal mandates or implement governmental programs. The following questions illustrate the criteria that are applied to proposed data:

Does the item originate from a demonstrably broad societal need, legal mandate, or program requirement?

Are the data needed for small geographic areas (for example, blocks or census tracts), or for small and dispersed population groups?

Could the information be obtained from sources other than the census, such as Federal surveys (for example, the Current Population or American Housing Surveys), administrative records, or private-sector surveys/polls?

Can the question be phrased understandably and could respondents answer it accurately?

Would the public perceive the item as frivolous or inappropriate?

Would the item yield reliable information, from conceptual and statistical perspectives?

Is the item affordable? Will specialized coding or processing requirements strain budgetary limits?

The application of these kinds of criteria by Bureau specialists leads to the selection of a set of candidate items. We then test proposed new items and also modified wording or format for questions that were asked in the previous census. The testing program will help us determine which of the many valid data needs can be pursued for the census.

The main testing vehicle will be the National Content Test, scheduled for next year. This test is designed to provide information on the reliability of the data collected and the ability and willingness of respondents to answer the questions. The mailout for the National Content Test will occur late in March of 1986, and we will complete analysis of the results by next winter. This will allow us to report to Congress by April of 1987 on the proposed subjects for the 1990 census. Additional smaller-scale testing may be needed after that as we decide on final question wording. Questions proposed for the census must be reported to Congress by April 1988, prior to submission to the Office of Management and Budget for approval under the Paperwork Reduction Act of 1980.

Planning and consultation to date have identified numerous subjects for testing. The National Content Test forms, which include both new proposals and traditional census questions, contain about twice as many inquiries as were on the 1980 census forms. As stated earlier, testing will help us narrow the list of candidate questions. Some of the proposed new or expanded topic areas include—

Housing: Identification of residential care facilities; identification of cooperatives and of congregate living units; secondary heating fuel and equipment; condominium fees; and mobile home costs.

Population: Highest educational degree held; disability limitations for children, and limitations in self-care and mobility for the population in general; receipt of benefits from government programs such as food stamps, Medicare, Medicaid, and energy assistance; health insurance coverage; pension income; and second jobs.

Now, Mr. Chairman, I will briefly outline some of the content changes we are considering. At this point, we are not suggesting that any of the 1980 census 100-percent or short form questions be eliminated totally for 1990. The short form probably will contain the same population questions as 1980. We are, however, planning to move the housing question on plumbing facilities from the 100-percent to the sample form. We will also be testing a sample housing question that combines the inquiries on total rooms, bedrooms, and kitchens into one inquiry, on the sample form, concerning a roster of rooms in the unit. If the test of this question succeeds, this would remove the total rooms question from the 100-percent form. We also plan to eliminate the 1980 sample housing questions on stories in structure, elevator in structure, and cooking fuel. We are studying the possibility of collecting certain housing data common to all units in a multi-unit building by means of a structure questionnaire administered to a knowledgeable respondent such as the owner, manager, or superintendent of the building. The approach might enable use to collect more accurate data and reduce the number of questions asked of the houshold respondents in multi-unit structures.

Another facet of testing I'd like to mention is the design of the 1990 census questionnaires. It is our goal to develop a set of questionnaires that represent the best possible balance between subject content, processing considerations, and esthetic ap-

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pearance. Because the census is conducted by self-response, we believe it is imperative that the questionnaires—indeed the entire mailing package—be attractive, understandable, and easy to use. In pursuit of these objectives, we will be testing in 1986 the use of contrasting envelope designs, the effects of motivational inserts and potential relationships between questionnaire layout (within constraints imposed by data capture systems) and the ability of respondents to fill out the questionnaires accurately and thoroughly. In conducting census tests, we will be drawing upon past experience and studies in this area, and also will use external consultants.

Final evaluations of the results from our 1985 test of a two-stage census procedure in Jersey City, N.J. will be available later this year. Preliminary findings indicate that the two-stage procedure did not have the desired results. There is evidence of only a slight increase in the mail response rate, no dramatic differences in coverage or in quality of the data on the basic 100-percent characteristics, and an extremely poor response rate for the second stage sample questionnaires. Additional details have been provided in materials accompanying this testimony.

Mr. Chairman, that concludes my brief remarks. I will be happy to answer any questions.

Mr. GARCIA. Just let me pick up on that Federal Agency Council. Can you give me a history of how long that group has been meeting? Is it this year, last year or does it go back 10, 15 years?

Mr. BOUNPANE. No, I think it is approximately 1 year that they have been meeting this time. Is that about right?

Mr. HERRIOT. Yes.

Mr. GARCIA. So that what we are really talking about is that this is a new group and they have just come into being in Washington?

Mr. BOUNPANE. New for this census, Congressman, but we did have a Federal Agency Council prior to the 1980 census and one prior to 1970 as well.

Mr. GARCIA. That is what I wanted to know.

Mr. BOUNPANE. After the census was over, they did not meet for a couple of years.

Mr. GARCIA. So this is following that same pattern?

Mr. BOUNPANE. Yes, it is, correct.

Mr. GARCIA. I am going to have my counsel, Ms. Fernandez, read some of the questions we have for you.

Ms. FERNANDEZ. It has puzzled some people as to why the Bureau has to ask certain questions in the census and also in its surveys such as the current population survey. Could you explain the reasons why questions like those on income, occupation, employment or the housing questions must be asked on both the current population survey and the census?

Mr. BOUNPANE. Yes, I will try.

The best thing might be to look at these documents we are going to leave which show the uses of those types of information in great detail, but let me just talk about some general concepts.

The real reason for asking those kinds of data on the census as well as sample surveys is to be able to get the information at small geographic areas. Sample surveys are very good for national estimates, even in some instances for State estimates; but if you need to get information for sub-State or small areas, the sample survey would have to be so large it would probably be unaffordable. So the prime reason for collecting information like that on both the census and another source is to get it at smaller geographic areas than would be available through the CPS or any other kind of ongoing sample survey.

Ms. FERNANDEZ. In line with the question I just asked, you mention in your testimony that one of the proposed topic areas is on

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the receipt of benefits, income benefits from government programs. Is not the Bureau already collecting that data on this area through the Current Population Survey as well as the survey of income and program participation and would not these surveys be more reliable since they are taken on an annual and less frequent basis? And, finally, why is this being considered for the decennial?

Mr. BOUNPANE. Yes. It is, again, for the reason I just mentioned, that we have heard that the information is needed at smaller geographic levels than are available out of either the CPS or the survey of income and program participation. You are correct that those other surveys can ask the questions in more depth than could be asked in the census and, therefore, would give a different kind of answer. You could only get a general kind of answer to these questions in the census.

The important thing to understand here is in the meetings of the Federal Agency Council, and those interagency working groups that were part of it, this was one of their strongest recommendations to us, that we ask this kind of information on the census. That is the reason it is being tested in the national content test. It is important to understand the word "testing" there. There has been no decision yet on whether or not to include it in the census, only to try it in the National Content Test to see how it works.

Ms. FERNANDEZ. As a followup to your statement, in the September 1985 Data Users News published by the Bureau, it reported the early results from the local public meetings, specifically on money, income on noncash benefits. The assessment made of those public meetings, which also included the participation of State officials, local officials, the public at large and academicians, was "The dominant view can best be expressed as if the Federal Government redefines income to include the value of noncash benefits, then the census should provide appropriate data if that change is made." It seems as though the Bureau is anticipating that change and proposing that those questions on the noncash benefits be included in the decennial. Can you explain why?

Mr. BOUNPANE. We have no intention of trying to do that, that is, to try and set any policy on level of poverty or anything like that. We are trying to react to a request made to us by other Federal agencies, that this is important information that they need to have. And I think the statement, what it was trying to say, is should it be needed, then it would not be available unless we now added it to the census.

Ms. FERNANDEZ. Is this a proposal to put it in the 100-percent form or the survey?

Mr. BOUNPANE. We are only testing on the sample form at this time.

Ms. FERNANDEZ. Which is available through the Current Population Survey.

Mr. BOUNPANE. Except the census is a much larger sample, a sample size of 20 percent of the country.

Ms. FERNANDEZ. In your testimony you say that many of the questions that were asked in 1980 will again to be asked in 1990. For the sake of making a good record, I would like to ask you to tell us the reasons as to why the Census Bureau includes some of these items, and maybe you could discuss the results of using them

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in 1980 and any other test results that you have. First, could you tell us the main reasons as to why the Bureau includes the following questions on the 100-percent form. The names of the people living in the household?

Mr. BOUNPANE. Names are primarily collected to make sure that we have done the enumeration properly and to complete the enumeration. Once that phase of the census is over, the names are removed from the record. In fact, they are never put into the data record that goes into tabulation, but there are aspects of the census that need names. For example, late in the census process we do a "Were you counted?" campaign which says, "We think we are finished. Were you counted in the census? If you think you were not, tell us." When someone sends back a form and says, "I think I was missed," we need to be able to check whether or not the person was actually in the census. Without a name, we would not be able to do that. There are many examples like that. But it is those kind of control purposes in the census that the names are really used for.

Mr. GARCIA. What are you going to do now with the critical housing shortage that we have in New York? We have people who are living in public housing who find themselves in a situation where there are now more than one family living in the same apartment; and it is a new phenomena, I would say over the last 4 or 5 years. For example, the records downstairs in the management's office states Mr. and Mrs. Smith live here with a daugther when in reality it is Mr. and Mrs. Smith and the daugther, coupled with Mr. and Mrs. Jones and the son. How are we going to be able to get a true count when these people are possibly living in violation of regulations put forth by the city housing authority and feeling they would jeopardize their home if, in fact, they do state the number of people living in the dwelling. How are we going to deal with that? We are talking about thousands of families. These are no longer isolated cases. There is no housing stock, and this is what we are facing.

Mr. BOUNPANE. You have raised an important issue here. We have to be able to convince people that their responses to the census are confidential so that they will be willing to put their name down even if they happen to be living in violation of some kind of housing regulations.

Mr. GARCIA. I am sorry to interrupt.

Mr. BOUNPANE. That is OK.

Mr. GARCIA. We have found that is becoming much more difficult. There is less trust. I am the one who probably preached confidentiality more than any person during the 1980 census in every community in this country, trying to convince people its importance. I would like to think we did a good job, but I know that we missed many, many people because they were concerned about confidentiality. Today, especially in poor communities where people feel they are isolated, and they view this government as a government that, is just checking to see how much I have got so they can enforce the law. It is like we are going through now with this question of noncash benefits. We are not checking W.R. Grace and the jet he writes off at the end of each year that we cannot get the moneys for. But I say that to you because I am not optimistic. I was optimistic as hell in 1979 and 1980, and I really traveled this

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country; but I do not get that sense of optimism and I am now somewhat of, I guess, a professional at this census stuff because I have been with the committee probably longer than anybody in a long time.

Mr. BOUNPANE. I think many of us share your concern that the job is going to be much harder in 1990 than it was in 1980. For that reason we are allocating more resources to our publicity and outreach efforts relative to what we allocated in 1980. We are going to need the support of many people to try to do that.

If people have suggestions, we are more than willing to listen to them if they can help us with this problem because we agree it is going to be a problem. We do have one thing in our favor—I do not know how much it is worth—that we did not have in 1980, and that is that in a court case in which we were sued to obtain our address list we said that that was also confidential under title 13. It may be argued that, gee, an address list cannot be anything to worry about, why can't we just see the address list, and we argued that was confidential under title 13 for many reasons, one of which was the one you were alluding to. If there were, in fact, some kind of housing violations, two families in a place where there is only supposed to be one, showing that address list is divulging that. We were upheld in the Supreme Court on that, nine to nothing, and we have at least this as a basis to explain to people there is some support for our confidentiality claim.

Mr. GARCIA. I just hope Mrs. Rodriguez and Mrs. Jones have developed that trust.

Mr. BOUNPANE. I understand that.

Mr. GARCIA. We will get right back to this. But I would like to ask you whether you think we should make the Census Bureau totally and completely independent of all Government operations?

Mr. BOUNPANE. No. I do not think we should do that. I guess I am not really the person to answer that.

Mr. GARCIA. Do you think it should be Presidential appointments for directors of the Bureau of the Census? Do you think they should be tied to Commerce? You know, my sense is that, especially with these noncash benefits, that we are zeroing in on the poor and we are not zeroing in on the rich. My sense of it is that if there is some way we can make it an independent agency, not dependent on Republicans or Democrats, liberals or conservatives, and just have people who are solid demographers and that is their profession, doing a job, then possibly the public trust would increase.

Mr. BOUNPANE. Well, some of those questions, Congressman, if it is okay I will not answer. But in general I do think that the agency itself is pretty close to or politically neutral and where it sits in the government structure is not so much as important as the attitude of people who work there. That I think still holds.

Mr. GARCIA. I guess what figures in my mind is the noncash benefits. At the meeting scheduled to take place and the people who are invited, I do not think there was real balance. I am not saying that every person that I would like to see participate in a conference should be on it, but I really think balance is absolutely essential and necessary. And if we had not intervened, I think it would have been terribly lopsided and it still may be. I do not know.

Okay, let's get back to the questions.

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Ms. FERNANDEZ. Going back to the 100-percent form, date of birth?

Mr. BOUNPANE. Well, the date of birth is used to obtain age which is obviously needed for many, many purposes.

Ms. FERNANDEZ. On the 100-percent questionnaire?

Mr. BOUNPANE. Yes. For example, this time we are going to produce for the States, for redistricting use, counts by those 18 plus and those not 18 plus and that must come from the 100-percent.

Mr. GARCIA. Why is that 18 plus? Why is that essential?

Mr. BOUNPANE. I guess, for knowing the number of voters.

Mr. GARCIA. We represent people, not voters.

Mr. BOUNPANE. Last time there was a problem in some instances where they did not have that age information to draw districts, and sometimes there was a concern raised that the districts they drew did not——

Mr. GARCIA. Where was that concern from?

Mr. BOUNPANE. Perhaps from the Justice Department or other places like that. So the States have requested having that. If I understand the argument properly, the States believe that if we are going to be judged on that after, we should have it at least before.

Mr. GARCIA. I would have some problem with that.

Mr. BOUNPANE. The idea, of course, is not to balance the number of people 18 plus by a district, at least the way I read it——

Mr. GARCIA. I understand 18 year olds can vote and those under 18 cannot vote. The Constitution is clear we represent people. We do not represent them by whether they are 95 years old or 6 months old.

Mr. BOUNPANE. There are some other reasons for asking age on the 100-percent questionnaire.

Mr. GARCIA. I can appreciate the others, but not for the 18 and older. But you point that out, and the Justice Department asked you for that?

Mr. BOUNPANE. No. The States have asked us for that.

Mr. GARCIA. What States?

Mr. BOUNPANE. Almost all of them in terms of an organization they have, State conferences of legislatures or something. I cannot remember its name exactly.

Mr. GARCIA. The State of New York asked for that information?

Mr. BOUNPANE. I do not know the answer to that. I can find out.

Mr. GARCIA. You said all the States.

Mr. BOUNPANE. The organization, National Conference of State Legislatures asked for this. I do not know how many states said yes.

Mr. GARCIA. Because they have asked it, is that the reason why you are putting it in?

Mr. BOUNPANE. Yes. It may be an unfortunate example. It was only the one——

Mr. GARCIA. It does not make sense. Okay. I just do not think you should do this for the politicians. I mean that. That is what you are talking about, elected officials, and I was a member of the State legislator and I do not think we should do it for them. I do not think we should do it for any special interest group and especially not politicians because there is only one purpose and it is self-serving, and they are going to draw those lines and those pat-

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terns based on many factors and age should not be one of them. I would have a real problem with that.

Mr. BOUNPANE. Another word on that, Congressman. We are charged by law with giving the States information to help them draw their districts. This information, though it is available to the States, is also available to other people as well, so that there is the ability to check to see whether or not someone has inappropriately drawn districts.

Mr. GARCIA. Inappropriately drawn what?

Mr. BOUNPANE. Drawn districts.

Mr. GARCIA. But they are going to claim they have been doing that from way back when. There is no politician that is going to cut himself out of a district, and they are going to do everything humanly possible to create the best environment for themselves so when they—and I am no different than they are. I mean I fall into that same category, so I really do not think that should be the case. I am a professional politician, but I just do not think we should do this for politicians. I think we should do it based on the way we have always done it and that is strictly based on population and where the Voting Rights Act applies, the ethnic background, because that is complying with the law.

Ms. FERNANDEZ. In 1980 the Bureau tried to count everyone. We have heard some talk that perhaps the Bureau will not be counting all aliens in 1990. What is your position and will the Bureau make an all-out attempt to count all people living here in 1990 or will they limit the count only to those who are considered to be legal residents? This question is derived from conversations and hearings on the Senate side regarding constitutionality of counting illegal aliens.

Mr. BOUNPANE. We intend to count everyone, including illegal aliens in 1990, unless we are directed not to.

Mr. GARCIA. You do not know.

Mr. BOUNPANE. We do not know what their status is, and we do not ask questions to determine it.

Ms. FERNANDEZ. If I recall, the Census Bureau presented testimony on the Senate side on September 18th which stated that it was their position that there is a constitutional requirement that all people be counted regardless of their citizenship. I think that was the Bureau's position.

Mr. BOUNPANE. Yes, it is our position. That is the way we interpret the Constitution and our legislation, and it says count all persons and that is what we intend to do.

Mr. GARCIA. There is an organization called FAIR, F-A-I-R, which I am sure you are familiar with. My personal encounter with the group was in California when I had, I think, a hearing in Fresno, and they really ripped me apart. I did not know who they were at the time, but I soon found out who they are and how they are financed. And they are now the same group behind Simpson-Mazzoli and they have every right in the world to do what they would like to do. That is their right. But the problem I had with them was that this has been a campaign of theirs for many, many years. It stretches back over several decades, at least the past decade. How much influence have they had in terms of this ques-

tion, if any, over on the Senate side? They have testified to your knowledge?

Mr. BOUNPANE. They did not testify, not at the hearing at which we testified.

Mr. GARCIA. Well, I would hope that the Census Bureau position be maintained. I do not see how it can possibly be changed, but you and I both know things change. I guess they will try again—as the former Senator from Kentucky tried to do—not have these people counted as it relates to the apportionment of States. I do not know how the heck you are going to separate one from the other if you do not know where people are born and you are just counting people who are here.

Ms. FERNANDEZ. Just two other questions on the 100-percent form. The number of housing units in your structure was one of the questions and also the cost of their housing. I know housing is the primary change that is being considered for the 1990 questionnaire. Can you speak specifically on those two questions?

Mr. BOUNPANE. About number of units in structure and the cost, rent or value of those?

Ms. FERNANDEZ. Yes.

Mr. BOUNPANE. I cannot answer the specifics of those. If you like, I can ask Mr. Young to do that. As to what programs require that information, we do have substantiating background to say why we ask those particular items. Would you like me to do that?

Ms. FERNANDEZ. Yes.

Mr. BOUNPANE. Art, can you help on that?

Mr. YOUNG. The question on number of units is first used by a number of federal agencies: Health and Human Services, HUD, Department of Commerce, and so forth. Describing the housing inventory in terms of number of units in structure, whether people are living in single-family houses, two-unit, four-unit, multiple-unit apartment houses describes how people live, the concentration of housing. It is used in planning of redevelopment areas, planning for new construction, planning for urban expansion. The problems of long-range utility planning, water, sewer, electric, gas as well as for schools, public transportation, the concentration, the type of housing determines to a large extent the network of utilities planning that is done both at the private and the public level.

Federally it is part of some of the information that is required in HUD reports to the President, the National Production Report. It is used in the program on the allocation of housing grants to low income people to determine the fair market rent program and this sort of thing. So this units in structure is woven into a number of federal requirements for data.

Ms. FERNANDEZ. Is there a better way to do it than the hundred percent questionnaire. For example, I know there is an annual housing survey. In terms of specific questions on structure, this is being asked of individuals living there who may not be familiar with a building structure and may not be responsive to the Bureau's questions. Are you looking at other alternatives, such as asking the owner of the unit, or the management agent of the unit?

Mr. BOUNPANE. One thing we are testing is what we call a structure questionnaire. That is, questions that apply to the whole build-

ing, perhaps ask them of some knowledgeable representative of that building rather than each resident of the building. We are going to try that in Los Angeles. We did it on a limited scale in terms of post-census analysis in Tampa. And if we can make that work, it would be, I think, very helpful. You get better information by asking it once about the building and not having to ask it of each person in the building.

Ms. FERNANDEZ. How successful was it in Tampa? I understand it was on a limited basis.

Mr. BOUNPANE. We did not actually do it operationally in Tampa. We tried to analyze what would have happened if it occurred. The real issue is the operational issue of asking the information at one point in time and matching it back to the census records that come in at a later point in time. We have to make sure we are able to do that.

Ms. FERNANDEZ. 1986 is the planned year for the National Content Test. Has the Census Bureau determined what will be the questions on the National Content Test? What is the status of that?

Mr. BOUNPANE. We have submitted the questionnaire to the Office of Management and Budget, and we are getting close to getting approval through them so that we can then design it and send it to print.

Mr. GARCIA. Why do you have to go through OMB?

Mr. BOUNPANE. As part of the law. The Paperwork Reduction Act, I believe. We are required to submit public forms to them for approval. If you are going to ask more than nine people the same set of questions, you have to go through the Office of Management and Budget.

Mr. GARCIA. I understand that Roger Herriot is in the audience. I ask you a couple questions? Would you give us some background as to where we are with the noncash benefits research? What is your responsibility as it relates to that?

Mr. HERRIOT. Well, that work is done in my division, in the Income Branch, as it has been in the past. We initiated that work largely at the direction of the Senate 4 or 5 years ago who specifically asked us to look into who was getting noncash benefits and assess how those benefits affect their status, and they were particularly concerned about low income persons at that time.

We began there. However, we have always been interested in the income distribution itself, not just on the bottom part of the distribution. You need to collect additional data, do other types of things in order to begin to flush out the information from middle- and upper-income groups, but we could not do everything at once so we started it basically concentrating on the low income again. Since that time we began the collection, a broader collection of these types of things in the Survey of Income and Program Participation where we can get a lot more information on pension coverage, health care programs, employer-provided benefits, these types of things that go up and down the matter.

We are also beginning research into using the data from the economic censuses in connection with the data from SIPP to provide values of the employer benefits and those types of things. We have been doing this work largely as an experimental program. We have kept the publication separate in a technical paper series which is

something the Bureau has done on many different topics over the years, essentially saying here is some research work that we are doing, we need to be able to publish that so we use these types of vehicles to get that done.

We have about a 5-year series of data on the low income programs and are now trying to take the next step in terms of trying to figure out—there are many, many alternative ways of going about this, and we are trying to think of a process where some of these can be narrowed down, which particular measure seems to be most useful for what types of purposes so that we can go on to program.

Mr. GARCIA. Talk to me about Medicaid. How do you work the formula out for the medical costs? How do you average that out?

Mr. HERRIOT. The way we treat medical care is to essentially treat it as an insurance program. It would be silly to compute a benefit in terms of the medical care received by a particular person. If you had a heart attack and you went in and you had treatment, a thousand dollars worth of medical care, that person is not in the same kind of situation as somebody who has $300,000 in their pocket. On the other hand, somebody who has Medicare or Medicaid coverage is in a different situation than somebody who does not. So it has some value.

The question is how would you attribute that value? What we attempt to do is to simply ask ourselves theoretically the question: What would somebody have to pay in order to get medical coverage valued at this? So it becomes very much like insurance companies do it. They have risk classes.

Mr. GARCIA. You average it out.

Mr. HERRIOT. And you average it out.

Mr. GARCIA. So a person in the last year of their life who is terminally ill and hospitalized and ends up costing anywhere from $50 to $100 to $200,000 as a cost to that person, that is averaged into the medical costs of a person who has just become a senior citizen. Now their noncash benefits are going to be computed based upon the person who was in the last year of their life incurring high medical expenses. You have to use some sort of a formula. There is no doubt that the last year of the person's life, is when they have their highest medical costs. Yet the people who are living are going to have to live based upon computations made of the people who, in this particular case, are dead. Is that fair? Does it make sense?

Mr. HERRIOT. It is an interesting question and exactly the kind of thing, the issues we want to have raised at this conference. What you are asking about—

Mr. GARCIA. Are you in charge of that conference?

Mr. HERRIOT. Gordon Green who works for me is charged with setting it up. What you are asking about is how should the risk classes be structured, who should be included in them?

Mr. GARCIA. No. What I am thinking about is the noncash benefits of those people who are living and who are going to be faced with the computations put forth by the Bureau of the Census at the completion of this conference. They are going to have to live with that and then that average will be used in the overall average of those who may no longer be considered to be below the poverty.

It is very complicated. What troubles me about the research on noncash benefits, frankly, is the question of the medical costs.

Mr. HERRIOT. I think that—my point of view—is the biggest problem there is. It is clear to me that somebody who has some kind of medical insurance is better off than somebody who does not have any. You would agree with that.

Mr. GARCIA. Right.

Mr. HERRIOT. How much better off?

Mr. GARCIA. Right.

Mr. HERRIOT. And whether or not you ought to then take that next step and label that as income?

Mr. GARCIA. Yes.

Mr. HERRIOT. Somebody who has access to public education is better off than somebody who does not. We do not usually call the implicit value of education that people get income and yet it is a benefit. It is not clear where to draw this line, and I think you are quite right in pointing out that medical care—something like food stamps is fairly clear. But medical care is a considerable question, and we are going to ask that that be addressed at the conference.

Mr. GARCIA. Mr. Herriot, how would we go about doing something similar to that for those who are in the corporate sector? How can we compute, to give you an example, stock options and the various other freebies? Not freebies. They are entitled to them because most of the people have worked hard on their work. I have no quarrel with that because I am a capitalist. I would like everybody to be rich.

How would the Bureau of the Census go about computing all those "noncash benefits" that major corporations give on a daily basis? The poor will be pushed out of poverty based upon statistics but in reality they are going to still be living under the absolute same circumstances they have been for many years. Would it be possible for you at the Bureau of the Census to be able to do that? Maybe you can answer that.

Mr. BOUNPANE. I cannot.

Mr. GARCIA. Would the IRS have to get involved in that or is the question so vague it just does not make any sense?

Mr. HERRIOT. The numbers of people who get, let us say, substantial amounts of such things are probably so small that it cannot be picked up with reliability in the surveys. We would certainly get some from time to time, but to ask the—first of all, you got to get to interview the president of General Motors which is no easy task. And then most of the questions that would be relevant to him would not be relevant to the other thousands of people that are in the survey.

Again, the theoretical issue is to what extent do you—where do you cut this thing off.

Mr. GARCIA. I know.

Mr. HERRIOT. There are very, very large amounts of money and very large amounts of population involved in employer benefits in general. We are looking into those that we think would make a statistical difference: pension plans, the employer contribution to health and benefit plans and so forth. Those are very large, billions and billions of dollars.

Ms. FERNANDEZ. I understand the amount of employee benefit is estimated to be over $200 billion.

Mr. HERRIOT. It is very large. But if you go out and ask people whether or not their employer pays for part or all of their health care, let us say, health premium, and how much, they do not know. They really do not. They often will know whether part of it is paid, but they do not know the value.

Mr. GARCIA. Well, to give you an example, in New York City, I think the average police officer just coming on, the cost to the taxpayers runs anywhere from $35,000 to $40,000, not the average of what he actually gets or she gets in salary, but it is all the other benefits that go along. OK.

Mr. HERRIOT. The way you would do that is to essentially try to get the respondent to sign the release so that you could go to the employer and ask the employer to fill out forms.

Mr. GARCIA. They are not about to do that, so forget it. I am sorry I asked.

[Laughter.]

Ms. FERNANDEZ. I just have one other question. It is interesting that the Census Bureau includes that insurance value as income. Why, does the Census Bureau include the value of medical benefits as income when, for tax purposes, medical benefits are not considered to be income? Is it not comparing apples to oranges? Medical benefits are treated as income for the poor only.

Mr. HERRIOT. Well, perhaps for tax purposes they are not defining it as income, but in the National Income Accounts there are large amounts of noncash benefits that are included in the GNP and the national income figures, and we really look to those accounting concepts much more than we look to the particular definitions in the IRS rates.

I would want to point out though—and I think it is an important point to be made—that the Bureau when it began its work or at least when it did its first publication was very careful to single out medical care as a separate thing. As you know, we provided nine different estimates, and one set of those does not have medical care in because we thought of it as something a little different. We are going to provide people with the information excluding the medical care, with the medical care, and then we even distinguish the medical care in terms of those risk classes included, institutionalized people because, again, the amounts of money spent for medical care for the institutionalized are very, very large compared to their numbers. And so that was the reason that lies behind the presentation like that, so that these issues could be looked at and we did not just lump them altogether and decide for everyone. It is all on the table.

Ms. FERNANDEZ. Just one last question. What research is the Census Bureau currently doing on noncash benefits? Since Dr. Smeeding developed those three methodologies, what we have observed is an application of them but not a thorough analysis. Have these methodologies been validated? Have they been subjected to validation techniques that other formula are at the Census Bureau? What research other than the development of those methodologies has been done?

Mr. HERRIOT. We are going through the process of fine tuning the estimates. We have had a lot of discussions in various forms about the particular assumptions and techniques applied. We tried some, a number of different techniques. We are proceeding with the research on value in employer benefits, trying to get sources of data and getting some techniques so that we can move forward looking at income distributions and get off just the programs focus that has to go in.

Mr. GARCIA. Again, I apologize for being late. We thank you very much, all three of you, for your testimony, and I think we have completed.

Ms. FERNANDEZ. We have questions we would like to submit to you for response and inclusion in this hearing record.

Mr. BOUNPANE. OK.

[Whereupon, at 11:50 a.m., the subcommittee adjourned.]

[The following answers to written questions were received for the record:]

UNITED STATES DEPARTMENT OF COMMERCE
Bureau of the Census
Washington, D.C. 20233

OFFICE OF THE DIRECTOR

OCT 2 2 1985

Honorable Robert Garcia
Chairman, Subcommittee on Census and Population
Committee on Post Office and Civil Service
House of Representatives
Washington, D.C. 20515

Dear Bob:

Enclosed are answers to questions submitted by the Subcommittee for inclusion in the record for the September 26 hearing on "1990 Decennial Census Questionnaire Content and Design".

I look forward to future discussions concerning the 1990 Decennial Census. I appreciate your continued interest in and support of the Census Bureau's plans and activities.

Sincerely,

JOHN G. KEANE
Director
Bureau of the Census

Enclosures

UNITED STATES DEPARTMENT OF COMMERCE
Bureau of the Census
Washington, D.C. 20233
OFFICE OF THE DIRECTOR

FOLLOW-UP QUESTIONS ON DECENNIAL QUESTIONNAIRE CONTENT AND DESIGN

1. Q. In your testimony you say that many of the questions that were asked in the 1980 census are going to be asked in 1990. For the sake of making a good record, I would like to ask you to tell us the reasons why the Census Bureau includes some of these items, the results from using them in 1980, and any other test results you have.

First, could you tell us the main reasons why the Bureau includes the following questions on the 100-percent form?

--the names of the people living in the household
--their date of birth
--their race
--whether they are Hispanic
--their relationship to the head of household
--the number of housing units in their structure
--the cost of their living

Second, why do you include the following items on the sample form?

--the place of birth of the person and whether they are a U.S. citizen
--their income
--their occupation
--their ancestry
--the amount of education they have completed

1. A. We have submitted for the committee files two sets of materials that provide the rationale for questions included in the 1980 census and for proposed new questions being tested for possible inclusion in 1990--Summary of Federal Legislative Uses of Decennial Census Data and 1990 Census-Justification for Population Items in the National Content Test. The following discussions summarize the reasons we include topics in the census and the major uses of 1980 census data. We provide these summaries for the topics you have specified.

100-Percent Questions

-Names of the people living in the household

Names are requested on the 100-percent (and sample) form to assist respondents in making sure everyone in the household has been included

and to allow the Census Bureau to ensure an accurate population count and high quality data. It would be virtually impossible to follow up for missing information without making reference to the name of the person(s) for whom the data are incomplete or inconsistent. Various coverage improvement operations must match names of potentially missed persons to names on questionnaires to determine if the person(s) have already been enumerated. Our extensive experience in matching operations has shown that name is essential for accurate matching.

During nonresponse follow-up, names are often needed to resolve situations where there may have been delivery mix-ups (e.g., the household at the follow-up unit may have returned a form addressed to a different unit). As with the coverage improvement searches, names are essential for coverage evaluation operations to determine who may have been missed or duplicated in the census.

-Date of birth

Age is a basic demographic variable used in the description and analysis of other types of demographic data and for the evaluation of the quality of the census counts of population. Many types of planning and public-funding allocation formulas require accurate data on age composition.

Direct reports on age are simpler to process, but give less accurate information on age than reports on date of birth, possibly because a question on age more easily permits approximate replies. For example, no matter what the instructions say, some people report their age as of their nearest birthday rather than their age on April 1, 1980.

There is also a tendency to incorrectly report infants as "1-year-old" even when they are not actually a year old on Census Day. By asking date of birth, exact age on April 1, 1980 can be computed.

Age is asked but used only when date of birth cannot be obtained for a respondent. Some persons, such as the very old who do not have birth certificates, do not know their date of birth and an estimated response is preferable to no response.

-Race

The Census Bureau includes a race item on the 100-percent census questionnaire because data for major racial groups (i.e., White, Black, Asian and Pacific Islander, American Indian and Alaska Native) are needed for small geographical areas to implement Federal programs and to meet legislative requirements. For example, block level data are needed for state redistricting and implementing the Voting Rights Act.

-Spanish/Hispanic origin

The question on Spanish/Hispanic origin or descent is included in the 100-percent census questionnaire to obtain information on the total Spanish population for small geographical areas (e.g., blocks) needed for the implementation of Federal programs and to meet legislative requirements such as Public Law 94-311 and the 1975 amendments of the Voting Rights Act of 1965.

-Relationship

The "relationship item" is included on the 100-percent questionnaire of the decennial census because it is required to determine the

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8. Q. What is the budget for the 1986 National Content Test? What would be the cost per housing unit?

8. A. The anticipated cost of the National Content Test is approximately $1.6 million. This figure has been allocated for all aspects of the test planning, data collection and associated field costs, and evaluation. The estimated cost for data collection and processing, excluding costs for the reinterview/evaluation program, will be equivalent to about $13.50 per housing unit.

9. Q. In 1980, the Bureau tried to count everyone. We have heard some talk that you perhaps should not try to do this with regard to all aliens in 1990. What is your position? Will the Bureau make an all out attempt to count all of the people living here in 1990 or will you limit the count to only those considered to be "legal" residents?

What are the practical difficulties that you would face if Congress told you to eliminate the undocumented aliens from the 1990 census count?

9. A. The Census Bureau's traditional understanding of the Constitution and the legal direction provided by the Congress has meant that for every census since the first one in 1970, we have attempted to count all residents of the country. Unless the Congress directs us otherwise, in 1990 we will again attempt to count everyone, in accordance with our residence rules that eliminate certain categories of persons such as foreign visitors or diplomats who live at official residences.

Should we be directed to exclude undocumented persons, there are a number of practical difficulties:

(a) We would have to determine the appropriate questions or set of questions that would establish accurately a person's legal status

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in this country, something we have never done. "Legal status" is not always clear. (For example, just when does a person here on an expiring visa become "illegal?" Is a person for whom a private bill is pending in the Congress to be included or not?) In order to exclude undocumented aliens from the apportionment and redistricting counts, a set of questions would have to be included on the 100 percent form, which would cause major space and questionnaire redesign problems.

(b) If we had to ask a series of questions to determine "legal status," the perceptual problems for the Census Bureau would be substantial because of the necessity for respondents to trust that their answers would not be harmful to them. Would respondents answer honestly? Would those undocumented persons just avoid the census and thereby encourage other minorities to do the same? Would the Census Bureau be perceived as an enforcement agency rather than an information gatherer? We are already very aware that public cooperation with the census rests upon a very delicate base of public trust and could be upset by public perception of the uses of the data, even if the facts are absolutely opposite to the perception.

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presence and composition of families so as to calculate poverty statistics and for all other purposes that involve the concept of the family. The relationship item ascertains the family or nonfamily relationship that links each person in a household to the reference person of the household. This classification process is required to provide information from the census about the size and composition of family households in the United States, the presence of subfamilies in American households, the presence of children in American families, the poverty status of American families, the income of American families, the housing situation of American families, and so forth.

-Number of housing units in structure

The number of housing units in structure question is a combination of two separate 1980 inquiries--units in structure from the sample form, and units at address on the 100-percent form. This question provides the basic physical description of the housing stock by identifying single family and multifamily units of various sizes. In the 1980 content reinterview, the item displayed a moderate level of reporting consistency. Questions similar to this have been used in 1980 and previous censuses as a coverage improvement tool. We are evaluating the effectiveness of the item for coverage improvement for 1990.

-Cost of living quarters (value and rent)

Value and rent are essential measures of the cost of housing and are also widely used as economic indicators at the block level. In local

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public meetings and other public forums these items generated substantial support. Measures of response variability calculated from a match of American Housing Survey and 1980 census responses were moderately high for value and low for contract rent.

Sample Questions

-Place of birth and citizenship

Information on place of birth and citizenship is needed to implement and evaluate Federal and state programs as well as to develop governmental policy and legislation. For example, the Department of Health and Human Services uses data on place of birth to implement assistance programs for refugees and to analyze the effectiveness of immigrant programs administered under the Social Security Act. Information on citizenship is used to implement the Civil Rights Act and the Voting Rights Act. Several states, including New York, require information on citizenship to implement legislation.

-Income

Income statistics collected on the sample questionnaire are used extensively by Federal, state, and local governments, business and marketing organizations, the academic community, and the general public to analyze the economic status of households, families, and persons for all localities across the Nation. Federal legislation such as Urban Development Action Grants and the Job Training Partnership Act require decennial census income and poverty statistics to determine the disbursement of program funding in local areas.

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-Occupation

Census data on occupations are used by many Federal agencies for their programs. Some of the uses are to--

- Determine needs for vocational training programs and to project other occupational/vocational needs.
- Measure the need for and progress made in affirmative action plans.
- Study the farm/nonfarm employment distribution in rural areas.
- Measure and study characteristics of specific groups of occupations such as scientists, engineers, and health and artistic occupations.

These data are also used by state and local planning agencies and private sector employers for industry recruitment, affirmative action planning, and other purposes.

-Ancestry

Data on ancestry are needed by Federal, state, and local officials and private organizations to identify ethnic groups in need of special services and to plan and implement education, housing, and other programs to address the needs of these ethnic groups. For example, the Minority Business Development Agency uses ancestry data to administer programs for minority businesses; the Equal Employment Opportunity Commission requires the data to implement antidiscrimination legislation. Also, the Civil Rights Commission requires ancestry data to provide Congress with a report on the conditions of Southern and Eastern European groups, as specified in an amendment to the Civil Rights Act of 1957. Several states, including Illinois and Louisiana, require ancestry data to implement certain provisions of their legislation.

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-Education

Data on educational attainment, in addition to having general utility as measures of the social and economic status of individuals and areas and as an indicator of the "quality" of the labor force or population of an area, are required by several laws to show illiteracy, high school dropouts, and the need for special education and/or vocational education programs.

2. Q. From the results of the studies you did after the 1980 census, how accurately and completely did people answer these questions?

--the ancestry question
--the income question
--the race question
--the education question

2. A. Information on the completeness of response to 1980 census questions is available in the basic reports and the summary tape files presenting 1980 census data. Specifically, these products show by geographic area the percent of persons who did not answer each question or whose answer was not consistent with other reported information. These percentages are termed "allocation rates." Information on the accuracy of the responses comes from evaluation studies like our 1980 Census Content Reinterview Study and from comparisons of national distributions with information from other sources like the Current Population Survey. Following are summaries of our knowledge on accuracy and completeness for the topics you have specified.

-Ancestry

Most of the population (about 83 percent) provided a response to the 1980 census ancestry question. However, the response rate varied

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substantially by region of the country, with the South having the lowest level of response.

Our evaluation shows a fairly high level of consistency, overall, in the reporting of ancestry but problems were noted on the reporting of ancestry for several groups. We are continuing to evaluate the results of the 1980 census question on ancestry.

-Income

At the national level the 1980 census yielded an aggregate total income about 5 percent lower than an independently estimated total income aggregate derived from administrative record information compiled by the Bureau of Economic Analysis, the Social Security Administration, the Veterans Administration, and so forth. In 1980, 11.5 percent of persons 15 years and over failed to respond to one or more of the seven detailed types of income questions. Both the aggregate income comparisons and income nonresponse rates represent improvements over similar evaluations conducted after the 1970 census.

-Race

Overall, our evaluations show the race question worked fairly well and had a very low nonresponse rate. An evaluation study that compared responses to the race question in the 1980 census with those in the Content Reinterview Survey showed high overall consistency in the reporting of race.

However, our evaluation also showed some reporting problems related to question wording and respondents' understanding of the question

and terms. In particular, the much larger number of Spanish origin persons who reported in the "other" race category in 1980 than in 1970 affected the totals and characteristics of the "White" and "Other" populations. The inclusion of nationality or sociocultural groups in the race item was confusing to some respondents and affected reporting in the "Other" category. There is evidence of some reporting problems in the American Indian category. Therefore, we are looking at various question formats for collecting data on race that will provide accurate data, meet major data needs, and potentially resolve some of the problems encountered in 1980.

-Education

People had relatively little trouble in answering the 1980 census education question. Only 4 1/2 percent of the population age 3 and over had a response allocated to the question "is this person enrolled in school" (either because they did not answer the question or because their answer was inconsistent with other information given). Of those enrolled, 5.3 percent had a year of enrollment allocated. About 3 percent of persons aged 25 and over had highest year of school attended allocated.

Matching data from interviews conducted in 1981 with 1980 census returns for the same 25,000 individuals shows that the two reports were within one grade or year of each other for 85 percent of these persons.

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3. Q. What studies do you plan to do to find out what changes are needed in these questions?

--the Hispanic question
--the income question
--the race question

3. A. Our major tool to examine the effects of proposed changes to census questions is the 1986 National Content Test. In some cases additional studies and evaluations have been done or will be needed. A summary of our study and evaluation plans for the race, Spanish/Hispanic, and income questions is provided below.

-Race and Spanish/Hispanic origin

We have already begun considering the types of changes needed in the race and Spanish origin questions. In addition to evaluating the 1980 census data, we have consulted with a variety of data users on the usefulness of the 1980 data and future data needs. For example, the Census Bureau established an Interagency Working Group on Race and Ethnicity, composed of about 40 Federal agencies, which conducted a detailed review of the pertinent issues and provided recommendations for 1990. In July 1985, we sponsored a 1990 planning conference on race and ethnicity and invited 30 participants from the academic, research, and ethnic communities. The invitees provided valuable advice on question wordings and formats to be tested in the 1986 National Content Test.

In 1986, we will test the versions of the race and Spanish origin questions in the National Content Test and in the test censuses in the

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Los Angeles area and selected counties in Mississippi. The versions of both questions will be evaluated based on an analysis of the test results (e.g., nonresponse rates and racial distributions) and a reinterview of a sample of the respondents.

On the basis of the 1986 test results and consultations with experts on race and ethnicity and other data users, we will determine the race and Spanish origin questions to be used in the 1987 test censuses.

-Income

In our 1986 census testing program, we will test a new income question on the receipt of income from public and private pension plans. A number of data users including Federal Government agencies such as the Department of Health and Human Services have expressed a need for more detailed information on the sources of income received by the older population. Other plans involve the testing of two multiple income source recipiency questions with composite income amounts received to see if additional income types can be identified and quantified without the addition of several dollar amount fields. Also, we will be evaluating the omission of a total income question to ascertain its effect on income nonresponse levels.

4. Q. Up until what point in the process can the question wording be changed?

4. A. Question wording for the 1990 census must be determined by early 1988 since we must report to Congress by April of 1988 on the questions to be included on the 1990 census questionnaires. Any changes to the question wording must be made by early summer of 1988 since the questionnaire package must be ready for printing in September 1988.

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5. Q. Regarding the Census Bureau's considerations to change the content of the questionnaires, when you say "planning" (on page 4 of your written testimony) does that mean that the Census Bureau has already made its decisions? Please describe the process the Census Bureau goes through in determining what questions to transfer from one form to another, what questions to eliminate, and what questions to add.

5. A. The use of the word "planning" may have been misleading since the plans are, of course, tentative and subject to change based on the results of our testing program. The process we use to determine what questions to transfer, eliminate, or add is based on the uses of 1980 census data and the needs for new data as reported in local public meetings, interagency working groups, the Federal Agency Council, advisory committees, special conferences, and so forth. We also review the Federal legislative uses of census data. Key to this process is determining the size of a geographic area for which the data are required. For example, if data are needed at the block level, then the question is a candidate for the 100-percent or short form. If the data are needed for census tracts and/or counties, the sample or long form is appropriate. If the only critical needs are for national data or data for large states or metropolitan areas, then the decennial census may not be an appropriate vehicle for collecting these data.

6. Q. On page 4 of your written testimony, you've mentioned that you will be testing some questions, what will you be testing? Haven't many of these questions been tested for the 1980 census?

6. A. Our written testimony specified the proposed new or expanded topic areas for which we will be testing questions in the National Content Test (NCT).

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The tests and associated evaluations will measure the completeness of response to all new or revised questions and will compare the completeness and distribution of responses to different versions of some questions. In addition, we will reinterview a sample of the households in the NCT and ask more detailed questions against which we can gauge the accuracy of responses in the NCT.

Although most of the testing and evaluation will be for proposed new questions, we also will test revisions to questions that were asked in previous censuses. Even when the completeness and accuracy of the 1980 data are acceptable, we still strive to improve the questions. Revisions proposed to improve clarity must be tested to see whether they, in fact, do improve response completeness and accuracy. Testing of this nature is planned for most of the topics that were included on the 1980 questionnaires.

7. Q. How do you plan to use the pre-tests to test the question wording? What role will the National Content Test play?

7. A. The National Content Test is our primary vehicle for testing question format and wording. The major purpose of test censuses or pretests is to test methods and procedures to conduct the census. These tests are not designed specifically for testing question wording. Of course, there are questionnaires and we do include some content testing as long as such testing does not interfere with the primary goals of the test census. For example, we will be evaluating the responses to race and Spanish origin questions in the 1986 test censuses in Central Los Angeles County and in East Central Mississippi.

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